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May 1995

Oceania's Amateur Magazine

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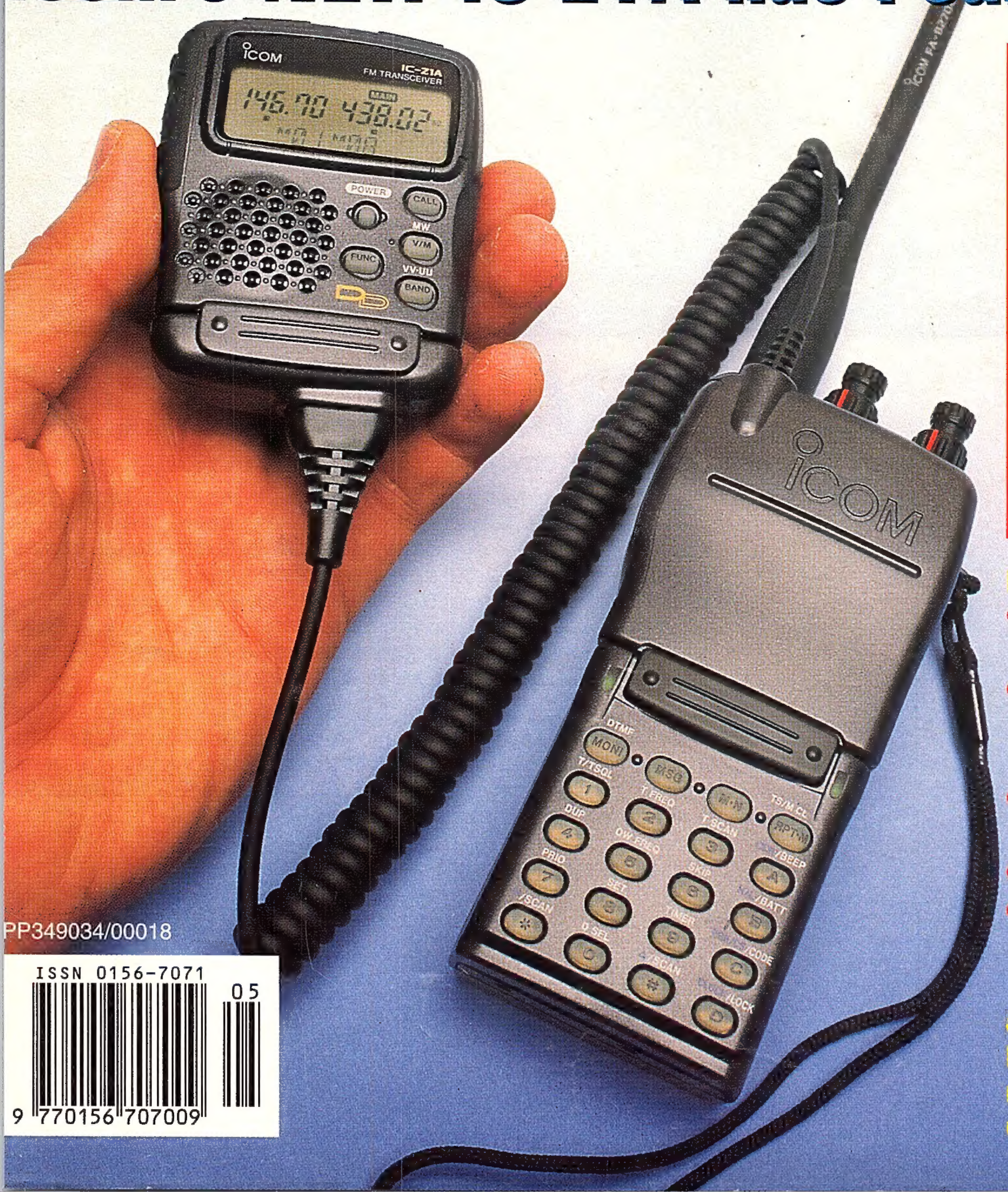
Icom's NEW IC-Z1A has real attitude



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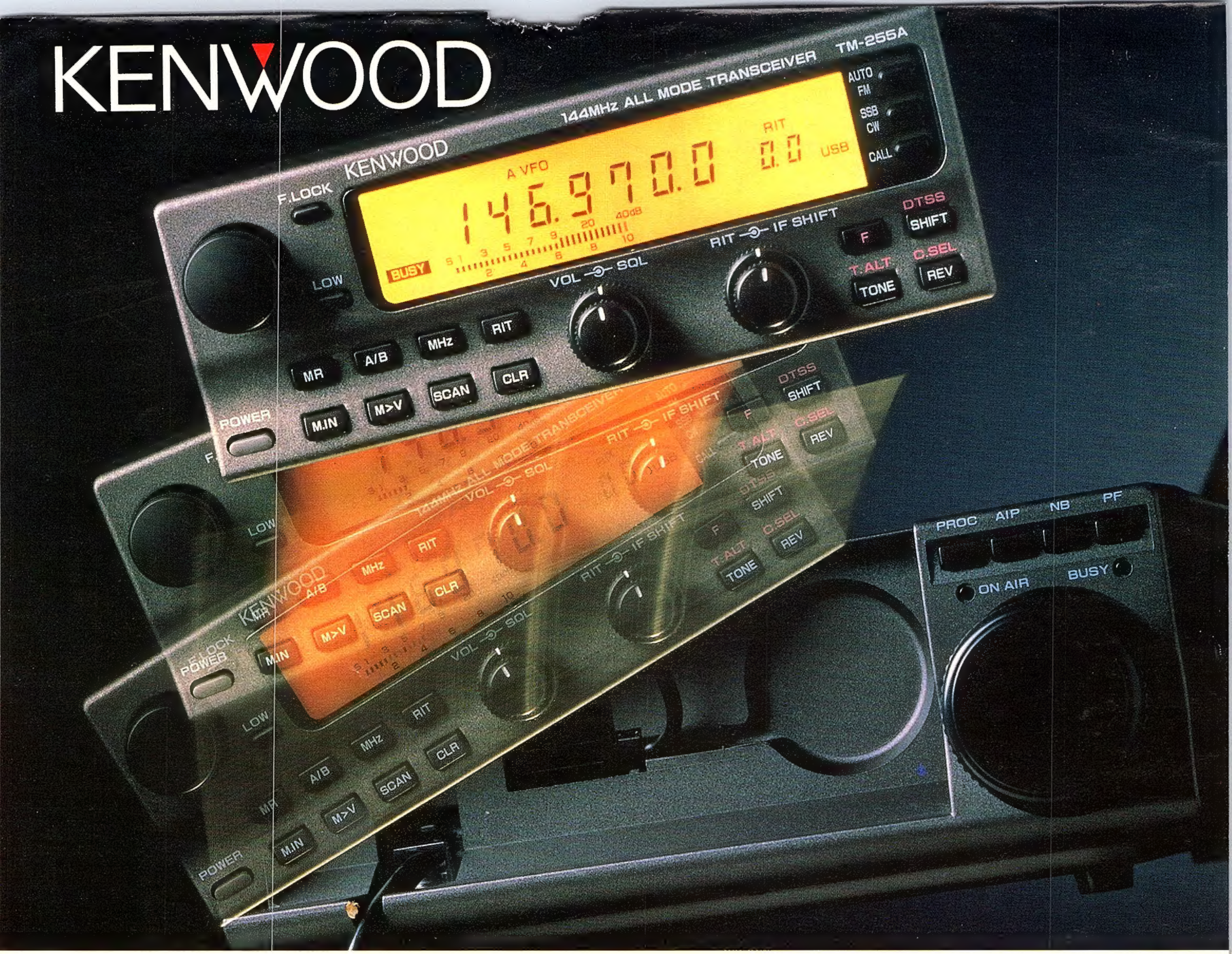

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DISCLAIMER: While all contributed material is read and checked as to its correctness, it is not possible to physically build and check every technical/project/modification article that appears in ARA. In consequence, we suggest that you use due care, be aware that most modifications will void a manufacturer's warranty, and that ARA accepts no responsibility for the small puff of black smoke which may be emitted from equipment at any time and for any reason.

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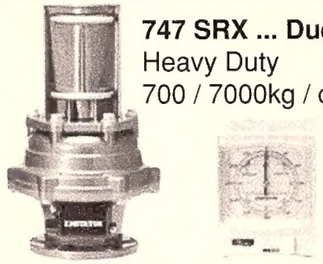

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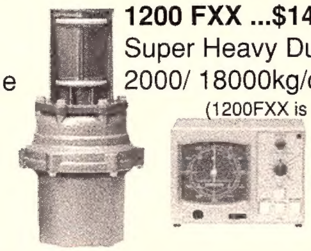

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EDITORIAL

IS THIS THE END?
- NO - IT'S JUST THE BEGINNING

ARA has been part of the amateur radio scene for almost 20 years and we're about to make it even bigger and better.

Not everyone was happy when ARA first appeared on the scene and fast established itself as an alternative to the WIA's subscription only "Amateur Radio" journal. We prospered, however, as many amateurs welcomed a point of view other than the "official one" and over the years we have been involved in plenty of controversy - which is usually the way if you don't necessarily agree with those who regulate your chosen pastime.

Along the way we've made a lot of friends and, I guess, a few enemies but overall we have always enjoyed strong support from both our readership and advertisers - so what are we on about.

Well basically we're on about moving with the times and trying to keep pace with the fast changing technology of communications in general. "Radio" is simply no longer the only form of communication used by amateurs while computers have largely replaced logbooks and Bulletin Boards have replaced the on-air exchange of information and data.

Then of course there is Internet and similar networks - all of which are destined to play an ever-increasing part in our lives.

Today's amateurs are using computers, modems, bulletin boards, satellite TV systems, weather satellite imaging, computer controlled sat tracking systems, packet radio, communications software, scanners - and more...

Having looked at what we needed to do to meet the requirements of these developments we realised for openers that we needed a lot more pages than we have in ARA - but we also realised that our sister magazine CB Action already catered to some of these areas and had a lot of readers who were studying to become amateurs.

The result?

A new 100 page monthly called **Radio and Communications.**

This new title will replace both ARA and CBA (the next, June issue, is the last of ARA in its present format) and will enable us to continue to provide the same amount of amateur reading as you now receive in ARA plus an additional 40 pages covering the areas mentioned above. Hobby communicators share many of the interests of amateurs and CBA hasn't really been a CB magazine for quite a few years - more of a "Popular Communications" type publication so you will find plenty of interesting, extra reading - even if you don't want to read a review on the latest HF or UHF transceiver.

Candidly, we would not have even considered doing this 10 years ago but of recent times the once enormous "gap" between amateurs and non-amateur hobby communicators has shrunk to such an extent that both will find plenty of shared, and new, interests to read about in the new mag.

Look at this way - you are not so much losing ARA as retaining all the usual features, reviews, etc. and gaining an additional 40 pages - all for the same price of $3.95.

The first issue of **Radio and Communications** *goes on sale June 27.*

We're very excited about it as we believe that it will introduce many newcomers to amateur radio - and give our usual readers even more value.

Think about it...

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WORLD NEWSDESK

NEW HAM BAND

American Ham radio has a new band from 219 to 220 MHz but not every ham will be able to use it. This is because the government says that hams must coordinate their operations through the recognized national society before going on the air. It's a first for modern amateur radio and here are the details.

When the new rules take effect, on a date that has not yet been announced, Technician and higher class amateur licensees will be permitted to use digital modes of up to 100 KHz bandwidth at more than 50 watts Peak Envelope Power output. This is because the primary occupant of the band is the Automated Maritime Telecommunications Systems or AMTS. And, to protect AMTS from interference by ham radio operations, the ARRL, the American Radio Relay League, has been designated as the singular national contact point for all amateur operations in the 219 to 220 MHz Amateur Radio allocation.

The League will be responsible for maintaining a database of all amateur operations in the band.

All hams planning to operate in the new band must notify the ARRL at least 30 days prior to initiation of operations.

Even after registering with the ARRL, there are more restrictions on who can use 219 to 220 MHz. Amateur stations within 50 miles of an AMTS coast station must obtain the written approval of the AMTS licensee prior to operating. Amateur stations within 398 miles of an AMTS coast station must notify the AMTS licensee in writing at least 30 days prior to initiation of operations.

The ARRL says that it will assist amateurs in fulfilling these requirements but the FCC warns that Amateur stations operating in the 219 to 220 MHz band are not permitted to interfere with, nor are they protected from interference by, primary service operations in and adjacent to the new band.

The FCC Report and Order on this action is ET Docket Number 93-40.

It allocates the 219 to 220 MHz band on a secondary basis to the Amateur Service specifically for point to point fixed digital message forwarding systems, and is the climax of almost six years of effort by the ARRL.

This, to obtain at least partial compensation for the loss of the 220 to 222 MHz band.

DX: IOTA CONVENTION

In DX, I0JQJ reports that the Fifth annual Islands On The Air Convention, organized by the Associazione Radioamatori Italiani will be held in Bologna, Italy from October 13th to the 15th. For more information write to Mauro Pregliasco, I0JQJ, the IOTA Country Assistant for Italy at his Callbook address.

AMATEUR LICENCE FEES - $51, FOR NOW

Amateur Licence fees will increase to $51, for all licence grades, commencing from 3 April.

The Hon. Paul Elliott, Parliamentary Secretary to the Minister for Communications, made the announcement in the House of Representatives late in the evening of 8 March.

The new fee is $20 less than the highest fee of $71 proposed by the Spectrum Management Agency (SMA) in February, but $14 above the $37 licence fee current in March, a 38% increase.

As many amateurs will be aware, the WIA wrote to MPs, both Government and Opposition, during January and February, as did many individual amateurs and some WIA State Divisions, putting objections to the proposed fee structure.

In a 9 March press release announcing the revised fee, Paul Elliott acknowledged the value amateur radio provides to the community, saying, "After further consultation and in recognition of the valuable services provided by Amateurs to the community in maintaining communications links, and in training young people to be proficient in communications technology, the SMA has decided to reduce the tax component of Amateur fees to the minimum level."

Mr Elliott's release said the new fee was based on the administration and maintenance costs provided to amateurs by the SMA, including the issuing of licences, managing interference, issuing and registering call signs, arranging and accrediting examinations, and international coordination.

"While we have recognised the unique community contribution of amateurs, it is quite reasonable that amateurs pay for the ongoing services provided by the SMA in managing the radio frequency spectrum they use," Mr Elliott said.

While the announcement of the revised fee can only be seen as a first step in resolving the whole issue of amateur radio licensing, a full response to the Government's announcement will be issued by the WIA after further analysis of the announcement and subsequent statements.

On 9 March, the Spectrum Manager, Christine Goode, wrote to WIA President Neil Penfold with further information on the revised fee structure and seeking a meeting.

Christine Goode advised that a common fee is to apply to all amateurs irrespective of the particular category, with the exception of beacons and repeaters which will be licensed on an assigned frequency basis, with fees determined in accordance with the 'standard fee table' (published in the SMA's document, "Inquiry Into the Apparatus Licence System: A New Outlook", released in February).

The new licence fee of $51 per annum consists of an administrative charge of $38, a spectrum access tax of $10 and a $3 spectrum maintenance charge (which is a fixed percentage of the access tax).

Christine Goode explained that, although amateurs have access to significant amounts of spectrum, the SMA decided, in consultation with the Government, to recognise some of the public value of amateur use of the spectrum by reducing the access tax component to the minimum level set out in their overall fees tables.

She added that the SMA will continue to require amateurs to contribute their fair share of the overall costs of managing the spectrum and in the SMA providing services specifically to amateurs.

In addition, since the minimum access tax is now applied, Christine Goode said it is no longer necessary to differentiate between licence types on the basis of the extent of spectrum access, as had been previously proposed.

The new fee will apply to every amateur licence issued after 3 April 1995 and to all renewals due on or after that date.

The matter of licence fees for amateur beacons and repeaters is to be pursued by the WIA with the SMA.

Above is courtesy of the WIA.

CABLE TV - QUESTIONS OVER EMC

The roll-out of cable television around Australia is well under way.

By the end of January, the Telstra Pay TV cable network had passed 100,000 homes Australia-wide, reaching its 50,000th home in Sydney alone in mid-February. Telstra (the operator of Telecom Australia) is on target to reach 400,000 homes mid-year and plans to pass one million homes each year from the end of this year.

They have been laying aluminium `hard line' cable under the streets since June last year. Philips Electronics Australia has been supplying Telstra with cable imported from Times Fibre of the US. In October last year, Telstra began a doubling of their roll-out and expects to reach 400,000 homes by mid-year, and plans to pass one million homes each year from the end of this year for the next four years.

Now, Optus Vision has joined the cable Pay TV bandwagon, having resolved its differences with the Minister for Communications, Michael Lee, over the issue of monopolising access which brought their plans to a halt late last year.

Optus began installing `hybrid' cable - comprising aluminium hardline coax and optical fibre _ in Sydney's western suburbs in late February, slinging the cable between streetside power poles. The optical fibre part of the cable is to be for Optus' subscriber telephone system to compete with Telecom's.

In an agreement announced late in January, Melbourne cable manufacturer, Olex Cables, part of the Pacific Dunlop group, will establish a factory in Tottenham to make hardline coax for both cable TV carriers.

The cable pay TV system employs radiofrequency transmission down the coax, between the service providers and the subscribers in their homes. However, the specifications for the cable transmission systems are not yet settled, according to an Austel spokesman.

Each supplier will likely have different transmission systems, although Austel are favouring `open' standards to avoid system monopolies.

One proposed system employs two spectrum segments: 5-65 MHz, for encoding and subscriber control, and 85-550 MHz, for the television channel transmissions themselves. A higher UHF band is `reserved' for future multimedia interactive systems.

The free-to-air television services don't want their channels used on cable systems and the Federation of Australian Commercial Television Stations (FACTS) have proposed that cable service providers use spectrum in the 230-520 MHz and 820-950 MHz ranges. There is some confusion over standards at present and an Austel committee is working towards developing a set of standards, but they're a moving target, Austel's spokesman said, and, while Australia is basically modelling its approach on European standards, we're breaking fresh ground.

Settling of standards is unlikely to occur within 12 months, but that may be accelerated in the future depending on prevailing circumstances within the industry. Clearly, there's potential for electromagnetic compatibility problems between cable TV installations and amateur radio operation.

The potential for amateur transmissions to possibly interfere with cable installations - either streetside equipment, set-top equipment in subscribers' homes or to the link from streetside to set-top - is at present unknown. Likewise, the potential for interference to amateur radio receivers from the subscriber `back channel' is unknown, and where and how problems might arise.

Austel's spokesman said EMC considerations are to play a big part in pay TV standards and Austel is wanting to have an urgent look at that as there a gap there at present.

The WIA is monitoring the situation and is to seek input on the EMC question to the relevant organisations.

ENFORCEMENT SAID TO BE "DISMAL"

The ARRL has told the FCC that its recent track record in Amateur Service rules enforcement has been "dismal".

In comments on an FCC proposal to adopt a standardized schedule of monetary forfeitures (fines) for rules violations in all services, the League said that while there have been only a few cases in the Amateur Service where prompt enforcement action was needed "badly and quickly", the necessary action did not take place "despite repeated (FCC) promises."

The ARRL said that the Commission has probably arrived at a reasonable forfeiture schedule but that administration of the schedule is "the more pressing matter." The League said that at issue were whether the fines were sufficient to (1) cause recipients to not violate a particular rule in the future, and (2) deter others from violating the same rule.

The ARRL said that the forfeiture proceeding (in CI Docket 95-6) should be far broader, to include a review of the overall effectiveness of monetary forfeitures as an enforcement tool, given that as presently used such forfeitures are often either ignored or contested.

The League said that in the few cases of amateur rules violations in recent years, FCC promises of action have gone unkept and the problems persist visibly. The ARRL suggested that forfeiture amounts for amateur rules violations be adhered to (instead of greatly reduced) and that collection efforts be carried through.

TWO AMATEUR SATELLITES LOST

Two amateur satellites were lost when their launch vehicle exploded.

The Israeli-built Gurwin-1 TechSAT and the Mexican UNAMSAT were part of the payload of a Russian SS-25 rocket originally built to carry ballistic missiles and recently converted to launch satellites. The Reuters news agency said the rocket, which was launched from Russia's Plesetsk cosmodrome, came down in the Russian Far East, in the Sea of Okhotsk, on March 28.

Both satellites were designed for packet radio repeater use.

Gurwin-1 TechSAT was built at the Technion-Israel Institute of Technology in Haifa as a 9600-bit/s packet store-and-forward satellite. UNAMSAT was assembled by students at the Universidad Nacional Autonoma de Mexico (UNAM) in Mexico City. In addition to packet store-and-forward operation at 1200 bits per second, UNAMSAT carried a unique "meteor radar" experiment.

Reuters noted that the 115-pound Gurwin-1 TechSAT was a prototype for communication satellites and "was to have been used by amateur radio enthusiasts". Reuters did not mention UNAMSAT. Two Russian satellites also were lost in the failed launch.

ICOM IC-Z1A

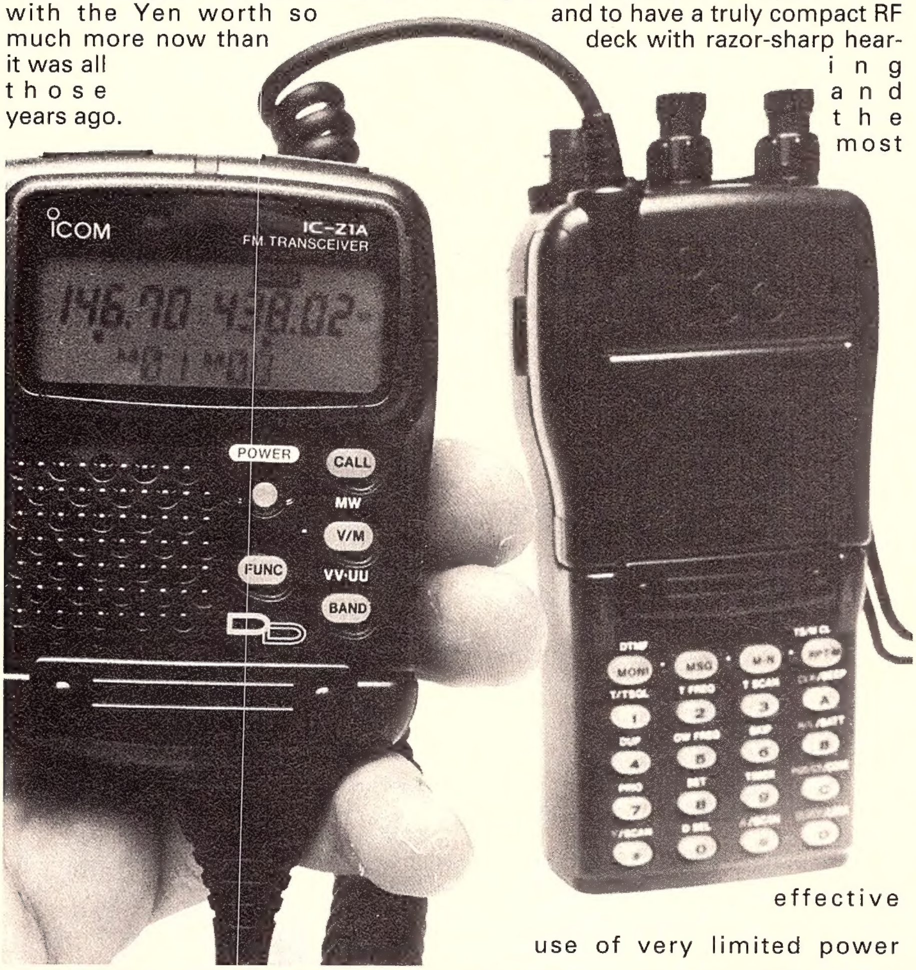
a dual-band HT with attitude...

It seems that each time one of the Big Three comes out with a new or updated handie-talkie (HT) we gasp, then search for words up to the task of describing the ever-better technology. This Icom newcomer is quite astonishing in its abilities — but it hits the market for *less* money than the model it replaces.

The best part of 10 years ago, it was right for us to use some very complimentary terms in describing Icom's then-new IC-32AT dual-band HT as quite amazing. And indeed it *was* for its day — but the all-new IC-Z1A is so much better than Icom's first dual-band HT was that it's not even funny. Not only that, but it's actually *cheaper* in real terms, even with the Yen worth so much more now than it was all those years ago.

I suppose I should admit that I'm something of an HT nut. I rarely go *anywhere* without one. But I'd be the first to tell you about the very real limitations of the breed. The biggest problem is that most signals you can hear will not be able to hear you. After all, an HT is limited by its portable nature, with relatively low output power and a very compromised antenna system. An HT isn't a purpose-built mobile unit, with lots of output power and a meaty audio amp for the receiver, and it's certainly a long way from an expensive multimode base rig — yet almost all HTs have *far* more functions than either of their larger brethren.

The trick is to make a hand-help transceiver user-friendly without letting all the fruit confuse operation — and to have a truly compact RF deck with razor-sharp hearing and the most effective use of very limited power reserves. To summarise at the outset, Icom has achieved these goals very well indeed in the innovative IC-Z1A.



The main new feature of this all-new radio is its unique removable front panel, which allows the user to use it as a conventional HT, or to fit the supplied curly-cord cable and use the front panel as a remote speaker/mic. But its RF performance has come in for some considerable attention, too.

Let's take a closer look...

The IC-Z1A has a two-part front panel, with a 'software'-type power switch, a clear LCD display with adjustable contrast, a full numeric keyboard, and a generally-sensible control layout.

There are a few quirky bits, though, and the one I found most annoying was the electronic volume control.

To change volume, you first make sure you have the band selector switch set to the band you want to adjust the volume of, then hit the volume button on the left of the removable panel (just above the PTT), then either push the up or down buttons or turn the rotary selector (tuning knob) for that band. Look, by the time you've done all that, the noisy signal you're trying to get rid of has gone, the important message you couldn't quite hear has faded out, or you've totally embarrassed yourself in front of someone.

You get used to anything given time, of course, but I felt the whole show was a bit let down by that.

There are two tuning knobs, one for each band, and two (conventional) squelch controls as well. I think I would have preferred conventional volume controls and electronic squelch, Icom... Using an HT, you adjust volume levels a *lot* more than the squelch.

In terms of clever tricks, gadgets and gimmicks, this one has the lot:

- 24-hour clock with its own multi-function display and on/off timers;
- the ability to tune two VHF or two UHF channels at the one time;
- selectable 'economy low' tx power of just 15mW — ideal for antenna work, field days or whatever;
- direct keyboard entry of frequency;
- you can easily lock the PTT to disable the transmitter;
- *huge* backlighting for keys and display, almost torch-like in its brightness;
- an optional multi-function external speaker/mic, which can be used at the same time as the remote front panel;
- a built-in voltmeter for battery volt-

age indication;

- you can record alphanumeric data with memory channels for easier identification of repeaters and the like;
- you can send six-digit messages via DTMF to other stations; and
- there are plenty of memory channels, with three scan-edge memories for each band.

Now, I'm not saying that all of those functions are useful. In fact, I'd put that transmitted DTMF message thing in the 'genuinely silly' class.

A real gimmick, that one!

Started by Kenwood a couple of models ago, it allows a user to muck around for a few minutes to program a word — perhaps a call sign or a six digit message like CALLME or 7:30 PM — into a memory, then transmit the message via DTMF tones to another similarly-equipped radio at some remote place. Mind you, the other radio has to be running, and set into a special mode to be able to receive the message. Oh well, I suppose Dick Tracy would like it...

The new IC-Z1A is not a 'small' radio in modern terms — it is mid-sized compared to the compact Yaesu FT-11 or Kenwood TH-79A, for example — but it's not too big to be considered uncomfortable, either. Just five years ago, however, it would have been one of the smallest HTs on the market! It has the PTT and a few other controls in funny places, but that's because of the way that front panel flips off at the push of a button.

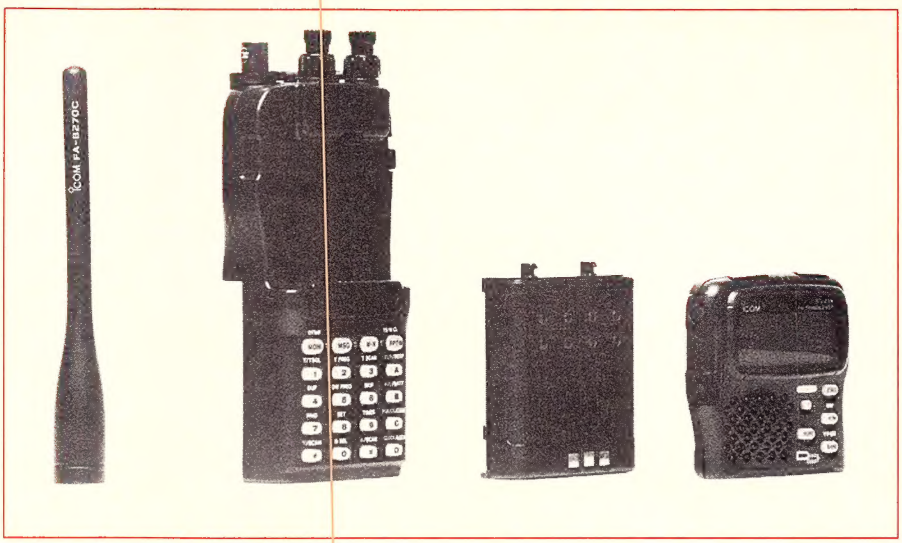
The function key works a little differently to those on previous Icom HTs, too. I'm used to hitting the 'F' key and a second control at the same time. With this rig, you hit the 'F' key, let it go, then hit the modifier you want.

Some functions require you to hold the 'F' key for a while, then the modifier. It's more Yaesu-like in this regard, but equally as effective. At least it gets a comprehensive SET mode to put lesser-used functions away in a menu-style arrangement.

On the air...

Audio reports were generally good, with stations reporting good, rounded transmitted audio which was obviously 'me'. Most stations reported a good mix of high and low frequencies, with no evident buzz or distortion. Used with an older Icom external microphone, reports were not quite as good but still acceptable.

In a mobile test (using an external antenna but sticking with the internal battery) I used the IC-Z1A with its clever supplied remote control cable, but without an external speaker or more audio output wick it was pretty useless in that situation.



Unless I held the panel right up to my ear I simply could not hear the station I was working. I didn't have a suitable cable handy to hook the rig into the car's DC supply — which would have given me five watts output — and, without it, the two watts was pretty hard to read at the other end.

I think the thing which really got me excited about the IC-Z1A is its receiver. It is remarkably flexible over an extraordinary range of frequencies. I bought a new Icom IC-R1 handheld scanner a few years ago, and I've been quite happy with it — but I was astonished to discover that the new IC-Z1A's receiver is quite a bit *hotter* than the IC-R1's in most of the commercial spectrum I frequent, which is an amazing achievement. Given that the IC-R1's design is now six or seven years old, it certainly highlights the frenetic pace of developments in RF design over the past few years.

Although the supplied specifications list the Australian model's frequency coverage as amateur bands only (like *all* VHF/UHF Icoms) don't believe it. The tuning range on the VHF side is 50 to 300 MHz, and the UHF side is 300 to 1000MHz.

Before you get too excited, though, while it might *tune* those frequencies, it doesn't actually *hear* all the way. You get no indication for an out-of-lock PLL, either, so there's sometimes a bit of guesswork involved. (By the way, for keyboard entry of frequencies below 100MHz, enter a leading zero.)

For all that, its performance on the AM aircraft band was really red-hot, with crisp AM performance slightly up on that of the IC-R1.

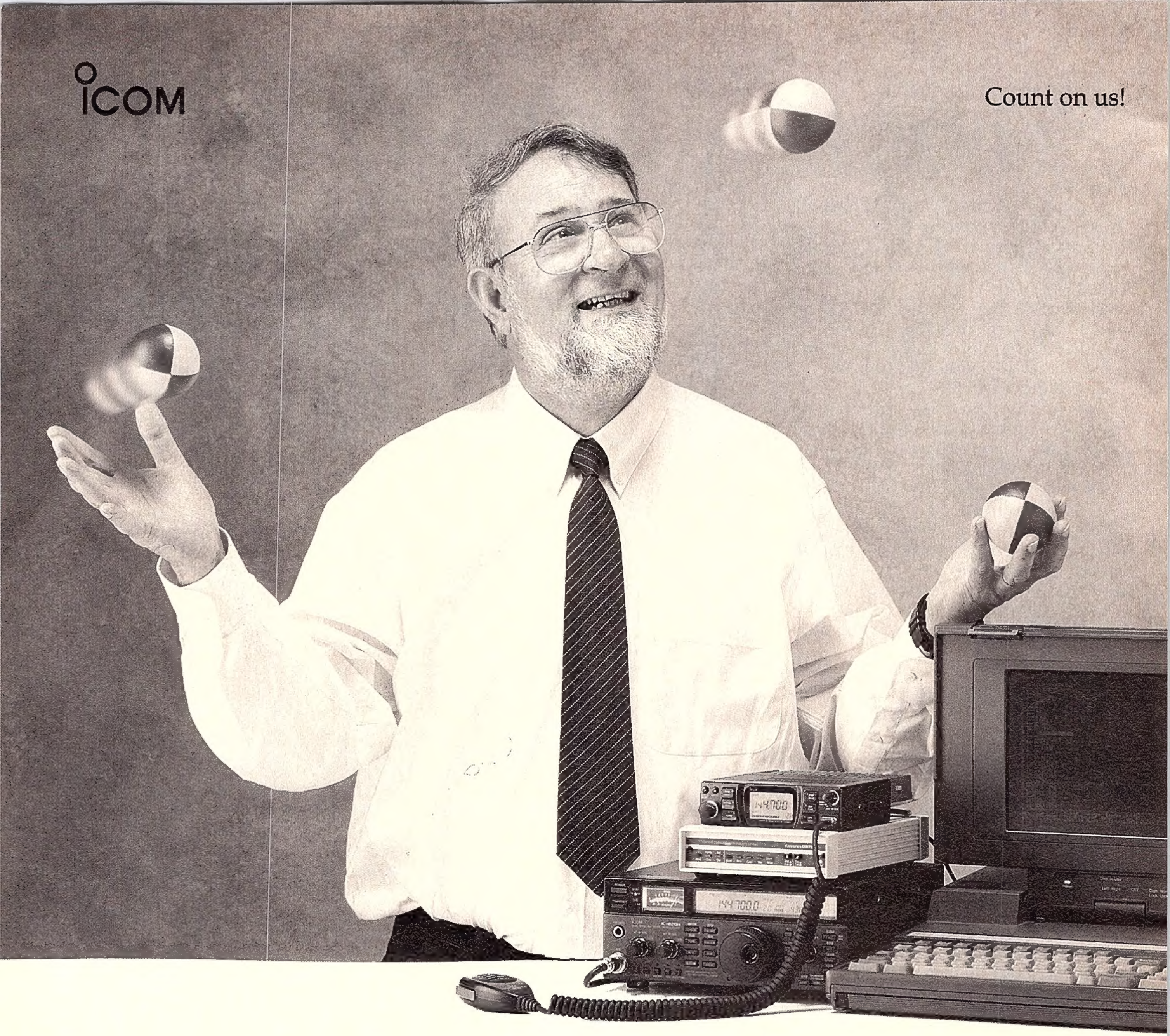
Right on past the two metre band (where it suffered pager interference only with a high-gain antenna at the top of the band) to the very top of the VHF-high commercial band saw little degradation in performance. I heard nothing above 200 MHz, but there's not much to find there, and I spent very little time looking for signals in that region. Similarly, I heard nothing whatever on the six metre band, despite being within very easy simplex range of several signals heard clearly on the IC-R1. I guess its PLL had long given up, but I *did* hear a few watery signals around the 80-90MHz range.

Its UHF performance was even better, with strong signals received over a range of literally hundreds of Megahertz. Way up at the 800-odd MHz trunking band, for instance, full-quieting signals pinned the S-meter by the bucket-load. By way of contrast, the same signals were noisy and disappointing on the IC-R1. The UHF commercial band was absolutely alive, too, easily the superior of the dedicated IC-R1 purpose-built receiver!

You might wonder why a radio like this would need 11 different tuning steps (5, 10, 12.5, 15, 20, 25, 30, 50 or 100kHz, 1 or 100MHz) but they sure come in useful in general listening!

One funny sight, while nosing about way up there, was when I first used the V+V, U+U function, which allows you to use both receivers in the one band. So I hit F+band, which

....☞



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ICOM IC-Z1A

(continued from previous page...)

made the VHF receiver operate on UHF, and set it to work scanning the UHF memory channels on one side while I manually snooped around UHF on the other.

Someone actually called me on a 70cm repeater while I was tuning around 460 MHz, and I was able to respond to the call.

You can do the same thing on the VHF side, too.

You could, for example, monitor *two* two metre repeater frequencies at one time, or even conduct a QSO on one repeater while monitoring another in the same band.

If you tried that stunt with a normal dual-band transceiver you'd possibly blow it up.

Even with lowish power, it's not too smart to transmit on or very near a frequency you're listening to. By default, the IC-Z1A disables the second receiver whenever you transmit, but you set it for full-duplex operation in the SET mode. A simple yet effective trick...

Receiver performance does take quite a tumble when you 'swap' bands, though.

The claimed receiver sensitivity on either band is better than 0.16μV — but use the VHF receiver on UHF or the other way around and that figure drops to 0.32μV... but that's still significantly better than most commercial rigs of just a few years ago. You sure can pick the difference, mind!

The supplied antenna is only about six inches long in the old money yet, on VHF receive at least, it seemed to work almost as well as a quarter-wave two metre whip, and equalled the five-eighths whip on 70cm.

The same story was repeated on transmit signal reports, but I haven't the faintest idea why! Usually, an HT's compact supplied antenna is little better than a dummy load...

Another neat trick, by no means exclusive to this radio, is the ability to switch it to monoband operation, whereby you have either VHF or UHF running, but not both.

It makes a surprising difference to battery longevity.

The claimed receive current figures are 210mA for both bands, unmuted at normal volume, or 34mA with both bands muted, but these drop to 160 and 23mA respectively for VHF and 170 or 25mA for UHF.

These savings are worthwhile, but not as vital as they might once have been. You see, some previous Icom HTs were supplied as standard with a piddling little NiCd battery pack with a capacity of around 300mA.

One good chat and the damned thing would be as flat as the proverbial. (My record from full to empty was 20 minutes on an IC-32AT, using full duplex!) If you wanted decent life from your batteries you were forced to buy extra NiCd packs, which are far from cheap.

Good news sees the adoption in the IC-Z1A of a low voltage final, which means the slide-on supplied NiCd battery pack — the BP-171, the baby of the range — is actually rated at 700 mAH at 4.8 volts.

Strangely, the next size up, the optional BP-172, is rated at 950mAH at the same voltage, yet it's exactly the same physical size.

There's also a higher-voltage pack, the BP-173, which gives 9.6 volts (and about 3.5 watts) with 650 mAH capacity.

The supplied plug-pack charger (made, I note, in Taiwan) resurrects the standard pack in a little over 10 hours, and Icom offers a fast-charge unit for a very reasonable price.

Summary

So there we have it. With their unbelievable popularity in their home market, new Japanese HTs seem to arrive with bewildering regularity, but this one shows that Icom's engineers have far from exhausted their pool of sneaky ideas.

The concept of being able to remove the front panel holus-bolus is actually a very good one, and means that only the most ardent users will want to shell out for a costly speaker/mic unit... particularly when the OPC-500 separation cable is thrown in for good measure.

No, you won't get caught out with this radio. The cable is *not* an option. It comes standard, as do the NiCd battery pack and AC charger. (We got caught out last year when we reviewed a radio where you have to buy all that sort of stuff, but it had been supplied with the review radio and nothing said, which was a bit sneaky.)

If you, like me, like to occasionally wander around the spectrum for a bit of a snoop, or if you spend more time listening than talking, you may well find this radio right up your alley. It's easy to use and easy to understand, particularly if you've had anything to do with an Icom HT in times past.

Overall, its on-air performance is right up with the best HTs we've ever seen, and I can see a *lot* of these radios moving into satisfied shacks.

The manual is typically Icom, beautifully written, and the transceiver is nicely presented in a secure foam and cardboard case.

Make sure you get the cheap optional carry case with yours — by keeping the rig unmarked, a case will add greatly to the resale price when you finally decide to upgrade to a later model.

The unit has a recommended retail price of $1049.12 including sales tax.

This newcomer's overall performance has reached a new high and, special prices apart, it is very price-competitive indeed with other products, with a demonstrated performance edge.

Amateur Radio Action thanks Icom Australia for the loan of the review transceiver.

EQUIPMENT REVIEW *by Chris Edmondson, VK3CE*

END FEEDING A DIPOLE WITH CO-AX CABLE

By Les Brennan, VK4XJ

The first antenna many old timers used was often the "End-Fed-Zepp, so named after the antenna system used in early zeppelin airships.

This antenna is a dipole at the lowest frequency required and end fed with an open wire feeder line; this feeder line was often home made and spaced 100 to 150 mm apart by thin dowel rods.

To improve the insulation quality of the spacers they were often soaked in paraffin wax.

Feeder length was usually a multiple of quarter waves long and circuit coupled the feeder line to the transmitter.

Looking at the current and voltage distribution along a half wave antenna, there will always be a high voltage point at the ends as current cannot flow any further than the end of the antenna. The voltage distribution will be 90 degrees out of phase with the current along the length of the antenna; if the current is zero at the ends, the voltage will be maximum at each end and therefore the Zepp Antenna is an end fed or voltage fed antenna. The ratio of a high voltage to a low current will equal a very high impedance at the feed point.

Refer to Fig 1.

For many years it has been convenient to use coax cable to feed an antenna with a nominal impedance, usually of 50 ohms. It is convenient in that the centre impedance of a half wave antenna is roughly near this impedance.

Because the end fed arrangement is a high impedance feed point, end fed antennas are not so popular these days. There are many installations where it may be more convenient to feed an antenna at the end instead of in the centre, for example when one or more dipoles are supported by a tower all the feeder lines can be tied to the tower, instead of hanging from the centre of the antennas.

A few years ago a commercial VHF/UHF mobile antenna was developed, this was not dependent on a ground radial system because it is a half wave vertical antenna fed with coax cable via a matching network.

This system works very well at VHF so why not on our amateur HF bands...the problem being to design a suitable matching network.

Measurement made with such an antenna revealed that a "LC" network is used. There is no DC resistance from the coax to the antenna but there is a DC path from the antenna to the side of the coax cable. ***A suitable circuit for such a network is shown in fig 2.***

The question now is...what would be the values for a suitable network to match a 50 ohm coax cable to the high impedance end of dipole?

It is not very clear from text books just what the exact impedance at the end of a dipole will be but it is likely to be more than 1000 ohms, so obviously the 50 ohm coax cable cannot be connected to this point as very little of the rf energy would be delivered to the antenna.

If the value of the end impedance of the dipole is known correctly maths can be used to derive suitable values of "L" and "C" in the network, however it is easier for the amateur to experiment, so let us take a closer look at the network.

We see that the coax is looking into a series resonant circuit and at resonance this circuit has a low impedance.

The antenna is connected across the "L" component and this network thus looks like a parallel resonant circuit as far as the end of the antenna is concerned - this is just what is needed to match the high impedance at the end of a dipole antenna. It was decided to make a suitable matching network as an experiment for a 21 MHz end fed dipole antenna.

What size of "C" would be required?

Looking up values that would be used in antenna traps, (a similar application), it was decided to try around 25 to 30 pf. A piece of double sided circuit board was used for the "C". A home made capacitance bridge was used and it was found that a piece of PCB, 15mm by 50mm was about 30pf. The shape of the PCB was designed to fit inside the plastic tube used as a former for the inductance. This tube, a piece of plastic conduit, was 15mm inside diameter and about 18mm outside diameter.

It is not necessary to calculate the inductance, just wind on about a dozen turns of small plastic covered hook up wire, shunt it across the capacitance and adjust the turns until resonance is indicated at the centre of the 21 MHz band using a dip meter. Check the frequency of the dip meter reading on a calibrated receiver for better accuracy.

In this case 11 turns were needed and the turns spacing adjusted for resonance - fine tuned by snipping at the edge of the PCB capacitance.

A HOUSING FOR THE NETWORK
(refer Fig 3)

A visit to the local hardware store provided all the material needed. A piece of plastic drain pipe 40mm O.D. and 100mm long is used to house the coupling network. Matching end-caps are available to suit the plastic pipe.

At the centre of each end-cap a threaded eyebolt (50 x 6mm) is mounted, one end for connecting to the halyard and the other side to fasten the end of the wire dipole. A UHF connecter is mounted 32mm at one end of the 40mm tube. Because of the round tubing, a file

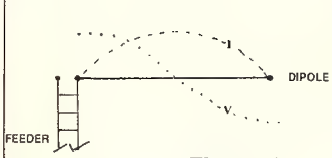

Figure 1.

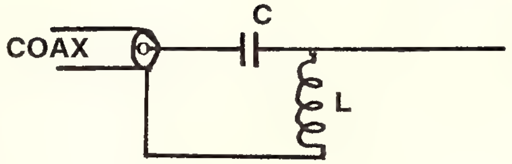

Figure 2.

was used to make this part a little more flat for mounting the UHF connector. As mentioned previously, a scrap of plastic conduit is used for the former of the inductance, this is 18mm outside diameter, and after assembling the coil and PCB capacitance, it is fixed inside the larger housing tube with a couple of brass screws and nuts. A 3/16 brass bolt is mounted about 40mm along from the coax connector and far enough from the end so as not to prevent the end-cap being fitted. ***Refer to diagram Fig 3.***

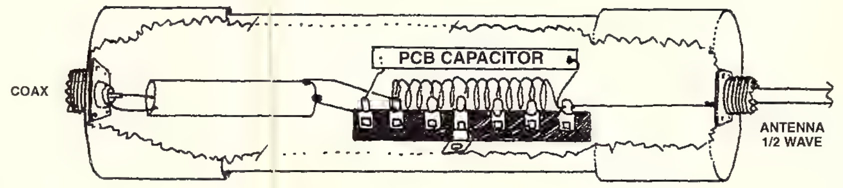

Figure 3.

MATCHING UNIT FOR END-FED VERTICAL

End caps are fitted and, as a final check, put a short on the coax input socket of the matching unit, without the antenna wire connected.

This will ensure that it is still resonant within the amateur band concerned.

The length of the antenna is a half wave at 21.2 MHz, from the formula 150 x 0.95 / F(MHz) equals 6.8 metres and once again the dip meter can be used to check the correct length of wire for the dipole. The end of the antenna is looped through the eyelet and held by a cable-tie to take the strain off the 3/16 brass bolt where it is connected by a solder lug. Usually it is sufficient to cut the length of the antenna to the formula and adjust its length for best SWR reading. When adjusted correctly, the SWR should be below 1.5 :1 across the whole band. It was decided to try a different "L" "C" ratio for the 21 MHz band, and a new "C" of 15 pf was made up. To obtain resonance it was necessary to wind on more turns and in this case 18 turns were required. The same length of antenna was used and similar SWR results obtained, proving that for a practical antenna the component parts are not as critical as one would expect.

PARTS REQUIRED:-

1 Plastic drain pipes 400mm diameter x 100mm in length
2 Plastic end caps to suit 400 mm tube
1 70 mm length of 18mm O.D. plastic.
2 Eye bolts 50mm long x 6mm thread
1 3/16 brass bolt for antenna connection
1 Cable tie for supporting the antenna around the eyebolt
1 S0239 Panel mount coax connector
Misc - 6BA brass screws, nuts, washers, solder lugs, hook-up wire.

A 14MHZ END FED ANTENNA

A 14 MHz coupling network was made in a similar manner to the 21 MHz version. The inductance used was 20 turns of hook-up wire wound on the 18mm plastic conduit tube and the capacitance is approximately 40 pf.

This capacitance is too large to fit inside the coil former as was done with the 21 MHz matching network, however, heavy copper wire is used to support it alongside of the coil.

A piece of heat shrink is slipped over this capacitance just in case it should touch any of the connecting screws.

Connect the capacitance across the inductance as a parallel circuit and adjust the inductance, also fine tune the capacitance by snipping off the end of the double sided board until resonance is in the centre of the 14MHz band.

Matching networks can be easily made up for any of our bands by following the information described for the 14 and 21 MHz units.

A 52 MHZ GROUND INDEPENDENT VERTICAL

This is a version of the end fed antenna for the 6 metre band. The circuit of the matching section is the same as used on other bands, however, in this case an air wound coil was made up comprising 13 turns of 16 gauge enamelled wire wound on a 1/2 inch drill and spaced over 22mm. The capacitor is a piece of double sided PCB, 7mm x 50mm with a capacitance of around 10 pf. A piece of resistor strip is used to support the coil and capacitor.

HOUSING

A piece of 50mm plastic tubing at least 150mm long is used to house the 52 MHz matching unit. At the bottom end of this tube is placed an end cap with an S0239 coax socket. A short length of 50 ohm coax is connected from this socket to the coil mounting tag-strip which is located near the top end of the tube.

A metal mounted clamp is fastened around the bottom of the plastic housing and thus away from the matching coil.

Another end-cap can be used at the top of the housing and a suitable mounting socket fitted to this end cap to support a half wave vertical for the 52 MHz band. The length of this whip would be approximately 275 cm. ***Refer to Fig 4.***

ADJUSTMENT

Before connecting the short length of coax from the bottom coax socket, place a small piece of wire across the tag block so that the inductance and capacitance are in parallel. Using a dip oscillator, adjust the capacitance or the inductance so that parallel resonance is indicated at the desired frequency within the 50 MHz band in which we want the antenna to operate.

Finally, adjust the length of the vertical section for lowest SWR. Being a half wave ground independent antenna no radials are required and a couple of "D" bolts are used to fasten the lower end of the plastic tubing to the support pole.

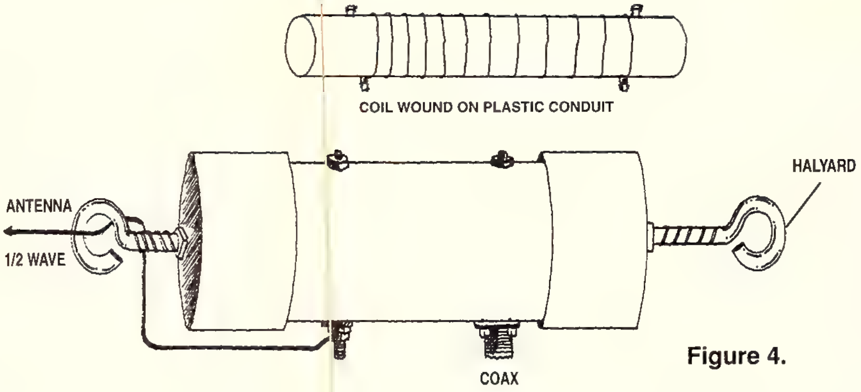

Figure 4.

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WHAT IS A LOG YAGI?

By Steve Ireland, VK6VZ/G3ZZD

Would you like a Yagi-like antenna that gives you the maximum amount of gain for the shortest possible boom length? How about an antenna that has the same boom length as a full-sized 3-element monoband Yagi, but offers you an extra S-unit of gain? Or for those radio amateurs where space is at a premium, what about a 20 metres monoband antenna that offers you the gain of a full-sized 3-element Yagi, but has a boom length of under three metres?

Sounds fantastic, doesn't it? These are the kind of performance figures that designers of log Yagis claim for their antennas. But the more sceptical of you are probably already thinking that this article might turn out to be a fairy story, rather than a technical feature. Well, that's as maybe.

All I can say is that there are a growing number of radio amateurs in West Australia who are turning to log Yagis for both HF and VHF work, as the result of the work of a few intrepid antenna enthusiasts around the country.

How it began...

The genesis of this article goes back about a year when the editor of this magazine asked me if I might be interested in writing an article on log Yagis, outlining in simple terms what they were and how they worked. Coincidentally, two friends of mine, **Keith Bainbridge**, **VK6XH**, and **Bill Billington**, **VK6UE**, had just become interested in building one each for the 20 metres band, as the result of reading an item on log Yagis by Peter Rhodes, K4EWG and John Painter, W4BBP[1] in *The ARRL Antenna Book.*

Since then, with expert guidance from **John Thomas**, **VK2AU**, professional antenna designer and a long time advocate of this kind of Yagi design, VK6XH and VK6UE have each built two different versions of log Yagis for 20 metres, with results that have equalled their wildest dreams.

In addition, with the assistance of VK2AU, VK6XH has built a number of these antennas for 2m, 70cm and commercial VHF/UHF frequencies, with similarly spectacular results.

The success of these single-band high-gain antennas and a chance contact with an American amateur based in Florida led me to look further afield, in search of a multiband antenna which seemed to use high-gain log Yagi techniques.

A range of these highly-sophisticated antennas is marketed in the US by **Peter Sommer, DJ2UT**, and will be touched on briefly at the end of this article.

For now, let us get down to brass tacks. So what is a log Yagi? As a starting point, let us talk about what it is *not* — a log periodic. Although these two antennas appear to have a lot in common, as far as performance is concerned they are chalk and cheese...

If you think this article will tell you how to build a Log Yagi you'll be disappointed - it does, however, give you an enormous amount of information about them. It also lets you know that the specific one discussed here will probably soon be available as a commercial unit.

Family ties

The log periodic dipole array (**lpda**) is a multi-band multi-element antenna that, depending on the design, will usually work over a 2:1 frequency range. The basic configuration of the log periodic is shown in **Figure 1**.

The arrangement of the log periodic's elements is usually referred to as a log 'cell'. All of these elements are 'driven', that is to say they all have a direct connection to the antenna feeder. In a conventional Yagi, usually only the radiator is fed, the other elements being excited parasitically.

In simple terms, the shortest element of the log periodic, at the front of the antenna, is resonant at the highest frequency in its range of operation, whilst the largest element, at the back, is resonant at the lowest frequency. Generally speaking, we are talking about half-wave resonance[2].

The log periodic has been around for a long time, and was invented by DE Isabell at the University of Illinois in 1959. Initially used by the US military, the log periodic has found favor with amateurs in a big way since the opening of the WARC bands — in particular 12 and 17 metres — with a single antenna capable of covering 20, 17, 15, 12 and 10 metres.

As most will be aware, commercial log periodic arrays covering these five amateur bands and claiming from 5 to 8dB gain over a dipole are readily available. However, lpda antennas covering this kind of bandwidth and with gain figures comparable to a monoband 3-element Yagi are generally very large — typically, up to a dozen elements on a 10 metres-plus boom!

In a nutshell, the lpda offers multiband performance with relatively low forward gain, unless large arrays are used.

In contrast, the log Yagi offers essentially monoband performance with relatively high gain, even from a small array. Although both antenna types use the concept of the multiple driven 'log cell', very different end results are achieved.

The log Yagi was first developed for amateur purposes by **Oliver Swan**, **W6KZK** in 1969[3]. In essence, it uses a lpda driven multi-element cell specifically designed to cover a relatively small bandwidth — and thus has a relatively high gain — in conjunction with additional

....☞

WHAT IS A LOG YAGI ?

(continued from previous page...)

Yagi-type parasitic elements. The idea is to get the best of the both worlds and, to quote Swan, "achieve higher gains and directivity than would be realised with either the lpda or a Yagi array alone".

It has been shown by research[4] that the SWR, forward gain and front-to-back ratio of a conventional Yagi, with the elements closely spaced for high gain, deteriorate sharply as the frequency of operation is shifted either side of the design frequency.

This means practically that a close-spaced Yagi designed for the center of the 20 metre band will show markedly poorer SWR, gain and front-to-back ratio towards the band edges.

According to K4EWG, the log cell is the determining factor of a log Yagi's bandwidth, the addition of a parasitic reflector and director simply serving to improve the overall gain and front-to back ratio of the array.

As a practical illustration of how the use of a log cell driven element broadens the bandwidth of a Yagi, K4EWG's close spaced 6-element log Yagi array — the basis of the antennas initially built by VK6UE and VK6XH — has a claimed SWR of 1.3:1 across the entire 20 metre band, along with a forward gain of 11.5dBd.

Building your own

Now that we have briefly discussed some of the technical arguments in favor of log Yagis, let us look at the practical work carried by VK6XH and VK6UE.

Like myself, both these amateurs were born in the UK and have regular skeds with the 'Old Dart' on the HF bands. Up to last summer, both used tri-band Yagis — VK6XH a Werner Wulf trapless 5-element and VK6UE a Cushcraft A4S 4-element — around 10 to 12 metres high, in typical sub-quarter acre suburban locations.

With the continuing decline in the sunspot cycle and 15/10 metres becoming virtually useless for communication with the UK, both wanted to build high-gain 20 metre monoband antennas which would serve them until conditions picked up again on the higher HF bands.

Looking though the various antenna books that were available to them, both came to the conclusion that K4EWG's 6-element log Yagi design offered the best available performance in the smallest possible space.

But there was one major snag — neither of them knew anyone who had actually used one or built one.

As some of the finer practical details of the K4EWG/W4BBP design seemed to be missing from the version of their QST article published in *The ARRL Antenna Book*, VK6XH telephoned K4EWG in the US. K4EWG was very helpful and suggested Keith get in touch with John, VK2AU who had designed and built several log Yagis and would be able to advise him on the general construction of such an antenna... without the VK6XH telephone bill blowing out!

Keith, who has his own business as a manufacturer of amateur and commercial antennas, constructed his antenna along the guidelines provided by VK2AU and in the article by K4EWG/W4BBP.

John suggested to Keith that the parasitic reflector of the K4EWG/W4BBP antenna could be discarded, as this would have little effect on the actual gain of the antenna and still result in a very acceptable front to back ratio, whilst reducing the boom length by almost two metres.

The reflector on the K4EWG/W4BBP 6-element 20 metre log Yagi serves mainly to improve the front to back ratio and the very high (30dB-plus) value claimed for this is not nearly as vital in Australia as it would be in the US, where strong signals off the back of the beam are an unpleasant fact of life.

VK2AU also suggested modifications to the spacing of the parasitic director from the log cell and in the length of the elements making up the log cell, as the result of his work to design an commercial monoband 5-element log Yagi, with a 4-element log cell and a single parasitic director.

Keith's resulting 5-element log Yagi is shown in the accompanying photographs. As you can see, the antenna looks quite at home in his small backyard. The basic element lengths and spacings of the original K4EWG/W4BBP 6-element log Yagi are given in **Figure 1**, along with some practical hints from VK6XH and VK6UE. Those wishing to build the antenna are directed to *The ARRL Antenna Book* or, preferably, *The ARRL Antenna Anthology* (see **reference 1**).

One thing to note for anyone thinking of building a log Yagi is that the mechanical arrangements for mounting the driven elements to the beam are much more sophisticated than for a conventional Yagi, owing to their split and insulated nature. A close look at the K4EWG/W4BBP antenna will bring this point home.

Whilst Keith who, as I said, has his own antenna manufacturing business, had spared no expense or effort in building his log Yagi according to VK2AU's guidelines and the K4EWG/W4BBP article, Bill took a rather different 'low budget' approach.

Although the lengths of the elements and their position on the boom were closely followed by VK6UE, each element was made entirely from 'scrap' aluminium tubing 30 mm in diameter, instead of telescoping several different diameters of tube.

Despite this factor, the SWR of Bill's 5-element antenna still seemed quite acceptable — under 1.6:1 across the band — using a ferrite choke balun at the antenna feedpoint and a quarter-wave matching section. This used 75 ohm coaxial cable, and was inserted between the 50 ohm RG213 feeder and the antenna feed point. Note that the K4EWG/W4BBP 6-element prototype showed a feed impedance of 37 ohms, while VK6UE's 5-element seemed to be closer to 100 than 50 ohms.

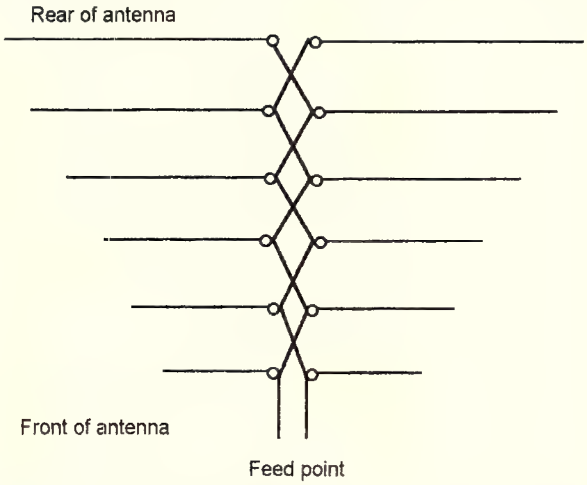
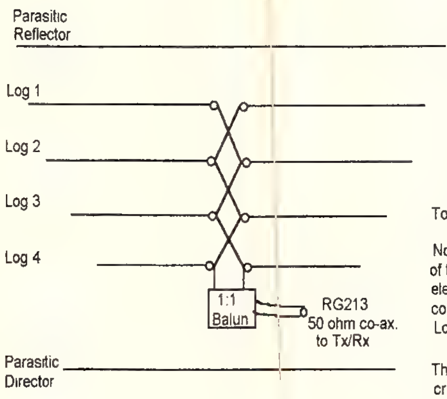


Figure 1: *Basic configuration of log periodic beam antenna*



ARRAY DIMENSIONS

Element	Total length (ft)	Spacing (ft)
Reflector	36.4	6.0 (ref. to Log 1)
Log 1	35.14	3.51 (ref. to Log 2)
Log 2	33.27	3.32 (ref. to Log 3)
Log 3	31.49	3.14 (ref. to Log 4)
Log 4	29.81	10.57 (ref. to Director)
Director	32.2	See above

Total boom length of antenna is 26.5 feet.

Note that above log element lengths are the total length of the aluminum used in each element. Each log cell element has a 3 - 5 inch gap at its centre, to allow the connection of the phasing harness. The total length of Log 1, for example is 34.4 feet + 3 inches.

The material used for the phasing harness seems non-critical. Originally 2mm diameter copper wire was used by VK6UE and VK6XH, but both moved to 9mm diameter aluminium tubing for improved mechanical stability.

Figure 2: *Layout of K4EWG/W4BBP 6-element log Yagi array*

It would seem, perhaps, that the parasitic reflector of the K4EWG/W4BBP design has a profound effect on the antenna's radiation resistance.

K4EWG/W4BBP noted: "Since the Log-Yagi array will be covering a relatively small bandwidth, the radiation of the narrow-band log cell will vary from 80 to 90 ohms (tubing elements) depending on the operating bandwidth. The addition of parasitic elements lowers the log cell radiation resistance."

As soon as both antennas were erected at around 35 feet, tests started with the UK (G4TLY, G4KEM, GW2SB, GW3TMP, G3UFO and many others) on both long and short paths.

Although direct comparisons with the old tribanders were not possible, it soon became apparent (using other local VK6 stations as yardsticks), that the performance of both log Yagis was superior to their predecessors by at least an S-point. With the marginal conditions which regularly exist on both the long and short paths to the UK at this stage of the sunspot cycle, the increase in performance was sometimes the difference between making a successful contact and not making one at all.

The only problem for both stations was the weight and 'windage' of the antennas. Even the conventional telescoped construction used by VK6XH resulted in an antenna weighing in at a total estimated around 40kg. This soon proved too much for the relatively light duty rotator in use at Keith's QTH, resulting in much wailing and gnashing of teeth.

At VK6UE, the lightest of winds caused the single diameter log Yagi elements to vibrate in a rather alarming fashion until rubber damping strips were fitted to the end of each element. Seeing his antenna behaving in this fashion, Bill nicknamed it 'the big bird'.

However, these were relatively minor inconveniences when seen in light of the excellent DX performance of the antenna. Bill noted that the side rejection of the log Yagi seemed 'immensely better' than his previous triband Yagi, with a front to back ratio of around 25dB.

Next steps...

A few months ago, talking to VK6XH at his house, Keith told me that VK2AU had come up with a design for a 3-element log Yagi array. This used a 2-element log cell along with a single parasitic director, and gave a claimed 9.5dB gain over a dipole — only 2dB down from the 5-element design. Not only that, but the design used a boom that was only 11 feet and 7 inches long — well under four metres.

This sounded amazing, to say the least, if not a little unbelievable! Still, having seen how well the 5-element had performed, and having become something of a convert, I waited — with bated breath — to see what would transpire. About a month later, both VK6XH and VK6UE had versions of the VK2AU 3-element design both in and on the air — with superb results.

Neither VK6UE or VK6XH could detect virtually any difference between the 3- and the 5-element designs as far as forward gain was concerned. However, the front-to-back ratio seemed markedly better. VK2AU had told them to expect around 33 to 35dB if the antenna was up at 66 feet. In practice, with his antenna at 37 feet, VK6UE found he could reduce an S9+5dB signal off the front of the beam to S0 when he reversed the direction of the antenna.

As with his previous 5-element log Yagi, VK6UE reports that the front-to-side ratio of the 3-element seemed vastly superior to his original conventional triband Yagi. VK6UE and VK6XH are continuing to conduct tests with the UK on the long and short paths, along with various other VK6 amateurs using conventional beam antennas, in order to gauge the on-air performance of the antenna as accurately as possible.

At this point, you are probably waiting for me to give you the dimensions of the 3-element log Yagi, so you can rush out and build one for yourself. Unfortunately, I must disappoint you on this point, because the antennas are likely to be sold on a commercial basis[5].

However, for those who are wondering how a 3-element log Yagi can produce such a high performance, I can at least shed a little light. The key here is to think of the antenna as a critically-coupled dual-driven array, with a single parasitic director.

For those of you who haven't heard of *critical coupling*, it is a technique pioneered by **Fred Caton**, **VK2ABQ**, and **Les Moxon**, **G6XN**.

The aim of critical coupling, used in VK2ABQ's famous 2-element design[6], is to cause RF currents of equal magnitude and with a specific phase relationship to flow in two close-spaced 'half wave' elements.

If this situation can be achieved, what you get is maximum forward gain from these two elements, along with maximum rejection of signals over a wide arc at the rear of the antenna.

Dick Bird, **G4ZU/F6IDC**, summed up the practical advantages of critical coupling very well in an article on a 2-element critically coupled array in the **ARA Antenna Book 5**[7].

"Mathematical analysis indicates that, in theory, on a spot frequency and a given wave angle, it should be possible to obtain an infinite front to back ratio. (You'd sometimes wonder how sensible maths really is...)

"In practice it is fairly easy to get 25dB or more F/B, with nulls of 30 or even 35dB on clear open sites without obstructions.

In this respect, it compares very well with a normal three element Yagi and occupies very much less space."

In the VK2ABQ and G4ZU/F6IDC antennas mentioned, the critical coupling is achieved by bringing the ends of the elements close together.

However, critical coupling can also be attained in a 2-element array by driving both elements, where it is governed by the spacing of the two driven elements and how the antenna is driven (ie the dimensions of the phasing harness).

....☞

WHAT IS A LOG YAGI ?

(continued from previous page...)

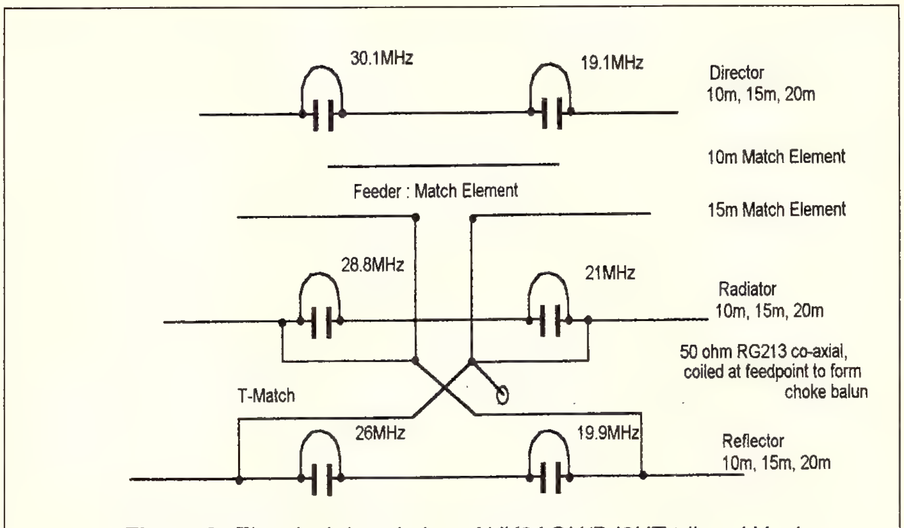


Figure 3: *Electrical description of VK2AOU/DJ2UT triband Yagi*

For more information on critical coupling, readers are recommended to the second edition of G6XN's ground-breaking book *HF Antennas For All Locations.*

Whereas conventional log Yagis use the number of elements making up the log cell to achieve the gain of the antenna, the gain of the VK2AU 3-element log Yagi is apparently determined by the critical coupling of the two elements which make up its log cell.

The addition of the parasitic director is intended to affect the impedance and front-to-back and front-to side ratio of the antenna, rather than having a primary influence on its gain.

What you can achieve with a carefully designed 2-element dual-driven log cell is the main advantage of a conventional 2-element close-spaced Yagi — high gain — without the latter's main disadvantage of narrow bandwidth which results in rapidly deteriorating gain, front-to-back ratio and SWR as you move away from the design frequency.

As a result of the use of critical coupling, Keith, VK6XH, says VK2AU prefers the antenna to be thought of as a monoband critically-coupled array, rather than a log Yagi. He adds that the dimensions of the antenna's log cell are very critical, with mechanical tolerances needing to be within 3mm or 1/8" of specification to ensure correct critical coupling.

Changing tack...

Having looked at several variations of log Yagis, from the conventional 6-element design of K4EWG/W4BBP to the 3-element critically-coupled design of VK2AU, let us consider yet another. This variety has been developed by **Peter Sommer, DJ2UT** and, for want of a better description, I shall simply refer to it as a multiband log Yagi. At this point I should add a note of caution. Whereas in the discussions of the VK2AU 3-element log Yagi, there are elements of informed speculation on my part, in the attempt to explain the working of DJ2UT's range of antennas. My explanation, then, is entirely speculative, informed by a considerable degree of detective work.

DJ2UT may be known to Australian readers as the development partner of **Hans Ruckert, VK2AOU**. Together, in the 1960s, they developed a triband beam based around an antenna element designed by VK2AOU, where the full length of the element was used on all three frequency bands. In essence, this approach "...depends on the fact that a half-wave dipole with two parallel-tuned resonant circuits in series at the center is resonant at three different frequencies..."[8]

DJ2UT continued to refine these techniques[9], using full-sized 14MHz half-wave elements to provide gain on 15/10 metres over a conventional half-wave antenna on these bands. Dual-driven T-matched elements, with crossed phasing lines similar to those in a log periodic, were used by DJ2UT to provide superior gain and bandwidth over conventional triband Yagi designs.

In his latest antenna designs, he seems to have harnessed these techniques to create what looks remarkably like a multiband log Yagi.

Figure 3 shows the electrical arrangement of the VK2AOU/DJ2UT beam, described in the April 1978 issue of *Amateur Radio* magazine.

Now compare this to the mechanical

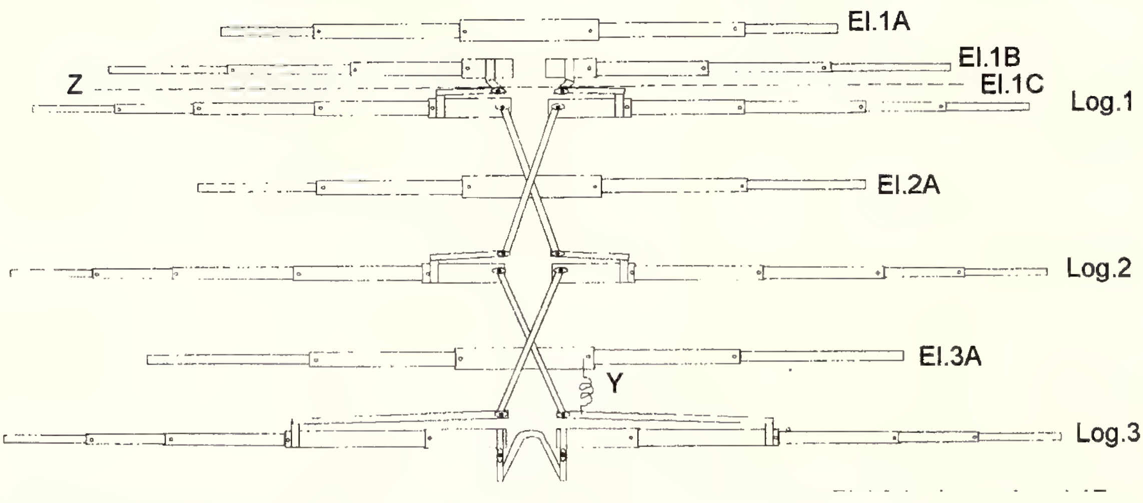


Figure 4: *DJ2UT XP50 multiband log Yagi (my description, not his!). Element **1C** is the optional 17 metre element, while **Y** is the optional inductor which allows the antenna to work on 40 metres with 0dB gain.*

drawing of DJ2UT's XP50 multiband beam in **Figure 4**. What you seem to have with the XP50 is a 3-element log cell which is multi-banded partly through the use of matching elements and T-matching, in a similar fashion to the VK2AOU/DJ2UT beam.

The VK2AOU/DJ2UT beam used capacitors made of coaxial cable and hairpin loops to form the parallel resonant circuits which 'tribanded' each individual element.

Although any mention of this technique is absent from the DJ2UT XP range sales documentation that I've seen, I wouldn't be at all surprised to find that it is used, as the XP's features include "...20 metres full-size operation... colinear 2 X 1/2-wave element feeding on 10 metres ... 5/8-wave elements on 15/17m...".

The XP range of four models is available in base form for 20/15/12/10 metres, but they are extendable to 17, 30 and even 40 metres with upgrade kits. The XP50 shown in **Figure 4** has a 4.4 metre boom, with claimed gain over a dipole on 20 metres of 6.5dB.

Claimed gain on the 10/15/17 metre bands ranges from 5dBd on 12 metres to 7dBd on 10 and 15 metres, with a front-to-back ratio of 15 to 25dB depending on the band.

Conclusions

As you can see, there is a big world of 'log Yagis' out there, just waiting to be explored, whether you want to build one or buy one. If you want a high-performance monoband antenna to see you through the dark days of the sunspot minimum on 20 metres, they provide an excellent solution.

And when the sunspots return to prominence, you could consider changing to something like the DJ2UT multiband antenna. I would *love* to try one of these antennas...

One thing is for sure — as time goes on, we are likely to see more and more sophisticated antennas appearing which bear an undoubted family resemblance to the old faithful log periodic. With designers such as VK2AU and DJ2UT active, these antennas are likely to get better and better.

Finally, a special thanks to VK6UE and VK6XH for sharing their experiences of log Yagis with me and to VK6NE and VK6APH for some stimulating discussions on the subject.

References

1 'Log Periodic-Yagi Arrays', page 10-25, *The ARRL Antenna Book*, 15th Edition. Note that a fuller version of the K4EWG/W4BBP article appears in *The ARRL Antenna Anthology*, 1978 edition, on page 49, headed 'The Log-Yagi Array'.

2 There is an interesting breed of log periodic with vee'd elements, which will also work on odd multiples of the fundamental array frequency. See 'The Log Periodic V Array' on page 10-20 of *The ARRL Antenna Book*.

3 'The Swan Multidrive 2-Meter Antenna', *QST*, October 1969

4 'Arrays of Cylindrical Dipoles', King, Mack and Sandler, *Yagi-Uda Program Appendix V*, 1968, pages 218 to 232, 468 to 470

5 Contact Keith, VK6XH, on (09) 279 4923 for further details.

6 Described in many different magazines and books, interested parties are recommended to the item 'The VK2ABQ Triband Beam and its Derivatives', according to VK2ABQ and G6XN, on page 22 of the RSGB's *HF Antenna Collection*, edited by E David, G4LQI.

7 Sommer Antennas, 395 W Osceola Road, PO Box 710, Geneva, Florida 32732, USA

8 'Aerial Topics', page 267, *Amateur Radio Techniques*, 5th edition, published by the RSGB

9 'A Different Multi-Band Aerial System', Hans Ruckert VK2AOU, *Amateur Radio*, April 1978.

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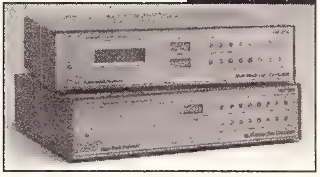

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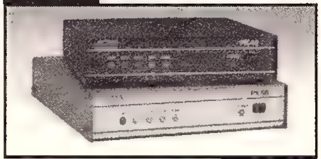
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HERE and THERE IN AMATEUR RADIO...by Paul Butler, VK3DBP

Last month in Here and There, we had a brief introduction to a book called 'Slow Scan Television Explained'. This slim but informative volume was written by Mike Wooding, G6IQM and published by the British Amateur Television Club. The column ran out before we had time to look at all this book had to offer, so the promise was made to give a few more details. And here they are...

In the last couple of editions of Here and There, we have been scanning through some of the more esoteric and exotic analogue and digital modes of communication available to the enterprising amateur. Slow-scan television (SSTV) has cropped up in this context on and off over the last year or so, but it has been very difficult to find any technical information about how this particular mode is put together.

Wooding's book provides some of this sought-after information. In Chapter 2, **Modes and Systems**, a step-by-step account is laid out, showing the evolution of SSTV modes from the early radarscope days to the present day of computers. The SSTV field is moving rapidly enough to have left even this account of events behind. But nevertheless, there is some valuable technical information here, so let's see what it has to say.

The 7/8 second modes

The first SSTV pictures were displayed on long-persistence radar cathode ray tubes (CRTs) because that is all that was available on the surplus market. A frame sweep time of about seven or eight seconds was all that could be managed, since this was about the time the image stayed on the screen — take any longer and the top of the image would be gone before the bottom had arrived!

The seven-second mode was commonly used in conjunction with a 60mS line time in Europe, which was derived by dividing the 50 Hz mains frequency by three. In the US, the 60Hz mains frequency gave a line time of 67mS.

It is the eight-second mode which has remained in common use today, however, and it is available in many SSTV software implementations such as JVFAX.

To convey the blacks and whites of the picture, amplitude modulation was used initially. This was replaced quite quickly by a frequency shift mode, in which 1500Hz represented black, 2300Hz white and 1200Hz was used for the line and frame sync. The final picture in this mode ends up with 120 or 128 lines per frame and so the resolution is very limited. It is still a popular mode, however, and is often heard used as a CQ signal because it is so quick compared with the higher resolution modes.

Higher resolution monochrome modes

To improve the resolution, it is necessary to make each individual dot in the picture smaller while keeping the picture size the same.

This means that data must be transmitted at a greater rate or the picture transmission time must be increased. There is a limit to how much information can be sent over the relatively narrow bandwidth of an amateur HF signal, so longer pictures times are used.

The times for the various higher-resolution monochrome (black and white) picture modes are closely related to the original eight-second 128-line system. So we have a 16-second 128-line mode, a 32-second 256-line mode and even a 64-second 256-line mode.

For color modes, a whole host of rates are used, most commonly in the families of modes known as Robot and AVT. Although the monochrome modes can be sent relatively free from interference, the time taken to send a picture could equally well be used to send a color image.

The color modes

To start with, color pictures were built up using a composite of three primary color separations: red, green and blue (the HF color facsimile mode is similar but uses the secondary colors, cyan, magenta and yellow rather than the primaries). The three images were stored separately, then displayed simultaneously on the screen. This was at a time when color cameras were not easy to come by, so color separations had to be obtained photographically using a set of filters.

To overcome the difficulties encountered due to loss of signal through fading and interference, each color separation was sent three times. If the set of separations was still not complete by then, the receiving station would ask for further repeats, lengthening even further the time taken to transmit the picture.

A line-sequential mode proved to be much more efficient — now the corresponding line from each separation was sent in turn before moving on to the next line.

This is the basis for most currently used SSTV modes, even though the details of each mode will vary from designer to designer.

Here are some of the more commonly used ones:

The Wraase SC-1 system

This line-sequential system starts with a green line immediately after the frame sync pulse, followed by blue and red. Interestingly, G6IQM's book suggests that the original intention was to use the more conventional red, green blue sequence but the first red line disappeared into the frame sync pulse because of a design fault. at the receive end, everything worked out okay, so the format was left this way.

The line sync pulse is about 6mS long, adapted from the eight-second monochrome system. There is a tendency for the system to lose or gain a line sync pulse in the midst of a burst of interference, leaving the received lines out of sequence and producing odd colors in the final image.

To get around this, a modification was introduced. A 5mS line sync pulse was sent before each red line, followed by a burst of 2300Hz for 1 to 2mS. This allowed the receive converter to re-sync itself after a few lines, but still leaving bands of odd color under difficult conditions.

The Martin synchronous mode

This was defined by Martin Emmerson, G3OQD and was at first known as 'New Mode', although this name could not last very long, as other 'new modes' soon came along! Now a line sync is sent only before the green line; a gap then precedes each of the blue and red lines. Note that this maintains the line sequence which evolved in the Wraase mode rather than being chosen.

Now the receive converter cannot get confused about which line is which, since there is only one line sync pulse. The gaps are filled with reference black at 1500Hz. Interference at frequencies near 1200Hz can still cause the converter to synchronise incorrectly, but at least in this mode the correct synchronisation can quickly be regained.

Another improvement was to remove the need for line synchronisation once a lock had been established. Users of JVFAX, which includes a software implementation of the Martin mode, will see this happen as a picture is received. Initially the program will search for a line sync lock; once it is obtained, the rest of the picture is received in free-run line mode.

This feature of the Martin mode produces a sharp edge to the picture but it does rely on accurate timing at both transmit and receive ends. This, of course, is not a problem with today's computers. Line sync pulses are still transmitted, which allows synchronisation if the start of the picture was missed. There are four different Martin speeds, two using 256 lines per frame and the other 128 lines per frame.

The Scottie mode

This mode was developed by ETJ Murphy, GM3SBC and bears some resemblance to the Martin mode.

The line sequence is different, however, as is the line timing and thus the frame time.

A green line follows the frame sync; then comes a gap and the blue line. Next comes a line sync and then the red line. This retains the sync-on-red pattern used in the original SC-1 software.

Originally the line syncs were used throughout the frame, leaving the mode susceptible to loss of sync due to interference.

In later versions, the line sync was processed in the software to make sense of it and so retain the synchronisation. Scottie mode may also be 'free-run' like the Martin mode, providing freedom from interference induced loss of sync.

As with Martin, there are four distinct Scottie speeds, two with 256 lines per frame and two with 128 lines per frame.

The Scottie DX mode

A longer transmission time should produce a better picture, since more information can be sent in the frame time. Martin should be better than Scottie, therefore, as it has a slightly longer frame time. In practice, there is little difference.

A version of Scottie which has an extended frame time is known as the DX mode, and can be used over difficult transmission paths.

The improvement results from the fact that, because more time is available for each line, each picture dot (or pixel, from 'picture-cell') has more cycles of tone in it. This means that interference has less effect on the pixel as a whole.

Phase distortion, introduced as a result of transmission path timing changes as the height of the reflective layer of the ionosphere fluctuates, have less effect, too, but the time to send a whole picture is increased to about four and a half minutes.

The Vertical Interval Signal (VIS)

This added feature was first used by Robot SSTV converters. It is a digital code transmitted in the frame sync pulse, consisting of a 1200Hz tone, then seven data bits and a parity bit. A tone of 1300Hz represents a zero and 1100Hz represents a one; all data bits are 30mS long.

The longer frame sync is ignored by non-VIS-equipped converters but can be used by VIS converters to switch into the correct mode for the picture about to be received.

Unattended operation is then a possibility, regardless of which modes are arriving on the receive frequency.

This provides 2^7 or 128 possible combinations and so modes other than the Robot modes have been assigned VIS codes. Even then, two modes were assigned the same code by mistake but this does not seem to cause a great deal of problem for the SSTV enthusiasts.

So there we have it, a quick run down on the common SSTV modes (and there are others), courtesy of 'Slow Scan Television Explained'.

The review copy of this neat little book was supplied by DAYCOM — thanks, John.

COMPUTER INTERFACES — TO GUI OR NOT TO GUI?

A lot of software passes through the computer on which Here and There is written. Some of it is excellent and stays on the hard disk, to be used again and again. Some of it lasts two minutes at the most.

As an example of the good, take JVFAX in its various incarnations, of which JVFAX 7.0 is the latest. This is such an easy-to-use and effective bit of software that a potential SSTV user need look no further. Possibly there are some SSTVers who might disagree with this comment but the principle is surely right — make software simple and make it work and people will stick with it.

On the down side, quite a few software disasters have come this way, to be tried and quickly discarded. Although 'disaster' may be a bit strong for this particular example, the VESTER SSTV software which Here and There found recently on the Internet is certainly clumsy to use and quite confusing. It runs as a series of GWBASIC programs (GWBASIC — there are many computer users who were not even born when GWBASIC was around!) and although a PhD in Computer Science is not essential to get it going, it would certainly help...

Anyway, this item is not concerned with raving about the good software and slamming the bad. Looking closely at a few programs recently led Here and There to think about the various approaches taken to provide what the jargon would have us call a 'user interface'.

The trigger to this line of thought was the computer program supplied with the MFJ-1214 PC multi-mode interface, which was recently reviewed for ARA's sister publication, CB Action. The hardware aspect of this MFJ package is sound and works to specification, which is what you would expect from a manufacturer of such renown.

The software side was not up to this standard, however. We are concentrating here purely on the way information and options are presented to the user, so take a look at **Figure 1**. This shows the main menu for the MFJ-1214 suite of programs. (Oh well, at least there *is* a menu, which is more than can be said for VESTER, which relies on command line prompts, GWBASIC commands or user-constructed batch files.)

Now this screen is an attempt — and a poor one at that — to present a graphical user interface or GUI. Commands are linked, as they should be in a good software screen, to single key commands, often known as 'keyboard shortcuts'. These should remove the need for a mouse for those of us who do not take well to such pointing devices.

....☞

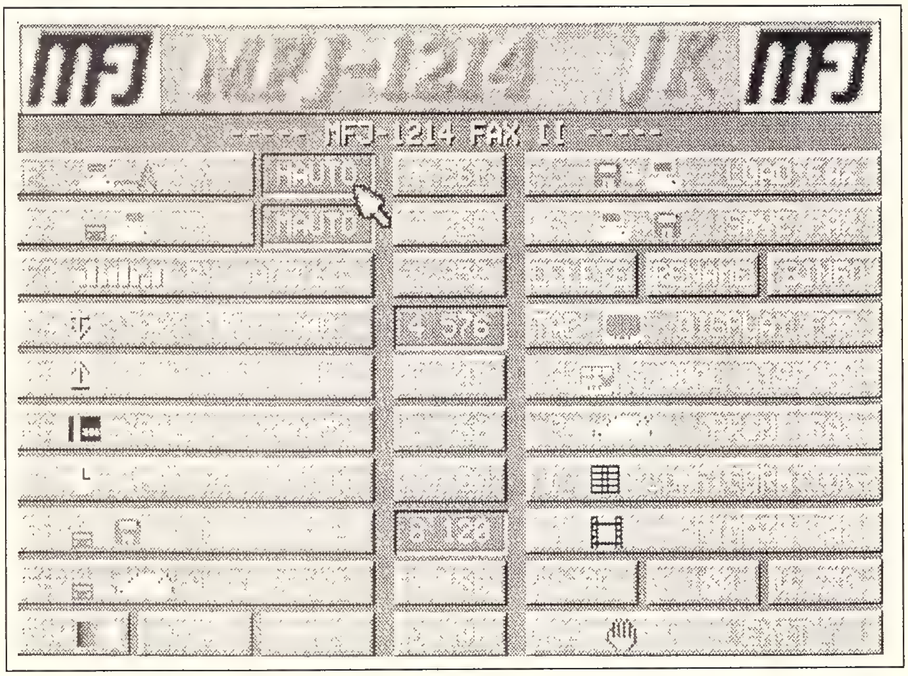


Figure 1.

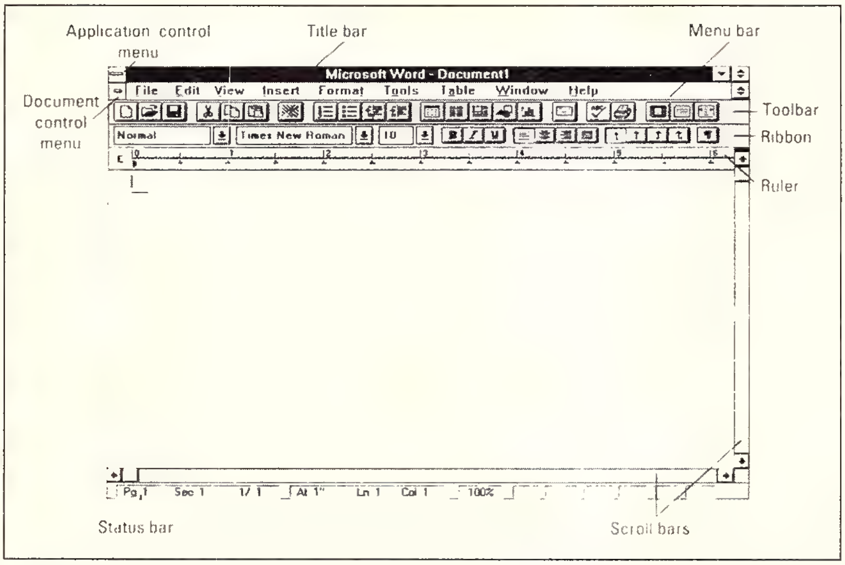


Figure 2.

Why is it so poor, you ask? Well, for a start, too much has been squeezed onto the screen. And there has been little attempt to use a range of typefaces to make the structure clear — why are the F1, F2 and so on labels not clearly different from the main text on each button, for example? Selected buttons do change color, at least — note '4 576' and '8 120' are darker than the others. But using a 'button' model has left the screen crowded, cluttered and confusing.

The MFJ screen compares very poorly with that of Wordperfect which just happens to be Here and There's favorite word processor, so there is a bit of bias here.

But we'll look at Word for Windows in a moment, so stick with the argument.

It is interesting that Apple used exactly this WordPerfect screen to compare unfavorably with its own Macintosh screen, the implication being that its simplicity means that the program cannot be any good or at least not as good as the Macintosh!).

WordPerfect and many other programs make extensive use of pull-down menus. The philosophy is that the user opens up a menu when they need it; at all other times, it stays hidden and out of the way. In cases where a series of choices have to be established before closing the menu and moving on, a dialogue box approach.

Once the parameters are set within the dialogue box, selecting okay by mouse or keypress closes the box and returns the user to the main screen.

For the heavy-duty GUI fan, the Windows operating system is one way to go. Windows has its problems, though, in the view of Here and There — the growth in size and complexity of Windows programs has upped the ante in computer hardware, since more hard disk space, memory and processor speed is needed every time something new comes out.

However, there are many Windows supporters out there, so we'll include the Word for Windows interface as another example of a clean, mean screen (see **Figure 2**).

The model here is a combination of pull-down menus, if you like that sort of thing, and icons, little pictures that are supposed to show you their functions at a glance. Do they achieve this? Well, some people would say that while you are learning what the little pictures mean, you may as well learn the keyboard shortcuts and get around so much faster. Oh, well, on we go...

As a final example of a GUI-like approach to screen design, try PC-Titler (**Figure 3**). This was acquired recently for use as the heart of an electronic messaging system, to display the daily messages to a large school population.

It takes the VGA output of a computer, converts it to composite video or an RF signal using an AverKey 3 decoder and sends the signal off to television monitors in a number of locations (around Mentone Girls' Grammar School, actually).

The designer's approach this time was to produce a program which would run on an absolutely basic computer, even an old 8MHz one (yes, sonny, they still exist!). Less than 640KB of memory is plenty and you *can't* use a mouse — so there. No, Here and There did not design the package but it suits our philosophy exactly!

What's the point behind looking at all these screens? Well, there are lots of people out there building programs to do a whole host of clever things, many of which feed directly into our favorite pastime, amateur radio.

Some programs are shareware or low-cost, others are commercially-produced. Wherever they originate, however, some are good and some are downright awful.

One major factor which often makes the difference, and moves a program from the latter category to the former, is the care with which the user interface is constructed.

Why ruin something which is otherwise quite nifty and clever by stuffing up the front end? Surely, if it is worth doing, it is worth doing *well.*

The examples here show a range of approaches to designing a user interface and whether they work or not can be very much a personal thing.

But one thing is very clear — the successful programs are the ones that people use. And a difficult set of screens is the best way to frighten your potential users away.

That's all from the Here and There soapbox for this month. Now no self-respecting software developer will let us anywhere near their products! Cheers and 73s from Paul, VK3DBP.

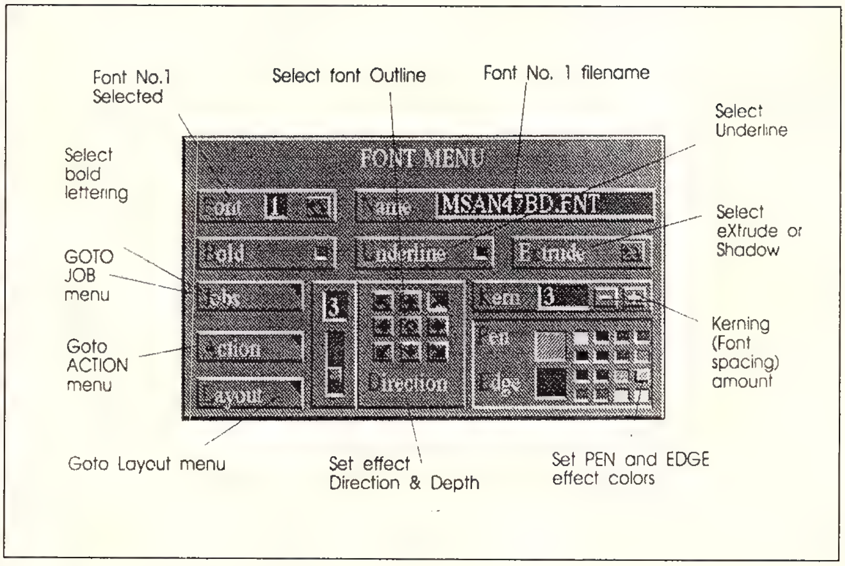


Figure 3.

If you're curious why we are not giving away this $600, high quality, 500 memory channels, top-line Uniden UBC9000XLT scanner in this issue of ARA....

...it's because we are giving it away in "Radio and Communications" - (hint) turn to page 25 to find out more.

THE RADIO WORKS G5RV PLUS

By Neil Duncan, VK3ND

Let's face it, any review item consisting of two pieces of wire, three insulators, one piece of twin lead and a balun is not likely to be all that exciting. In addition, there is hardly anything new about the G5RV antenna design either. That classic has been around for donkeys ages and is used world-wide.

Actually, I wonder if Louis Varney has ever regretted associating his call-sign with the antenna.

"Yerrr, fine business old man, Loose, errr, Gurss, errr sorry whatever the name is.

But say, haven't I heard that callsign somewhere before?" comes a QSO across the Atlantic to the G5RV shack. You really *would* get sick of it...

The formula is simple: Take a flat length of wire, 102 feet long (feet? It's an old design!), 30.3 feet of twin lead — in this case, made of wide-spaced 450 ohm ladder line — and connect the coax to the shack via a balun.

The twin lead on the original design was made from 300 ohm TV ribbon, as I recall. Maybe that's why this one from the American Radio Works company is billed as the PLUS version. I dunno.

The result is an antenna which should do the trick on 80, 40, 20, 15 and 10 metres, without any switches or the like.

So why would you buy a commercial G5RV rather than build one yourself if it is all so simple? That is easy to answer: you front up to the store, pay your money and take home one bag with the whole thing measured, cut, soldered and ready to go, The insulators, balun, light weight copper wire and even some connector sealing goop are all there and all connected up, all finished. For some of us in this busy world, that is a great bonus. To me, sadly, the silly price of the thing makes it just *too* tempting to buy the thing just like that.

Raising the G5RV

Now, how do you write a seven-page 'manual' about something as simple as a G5RV antenna?

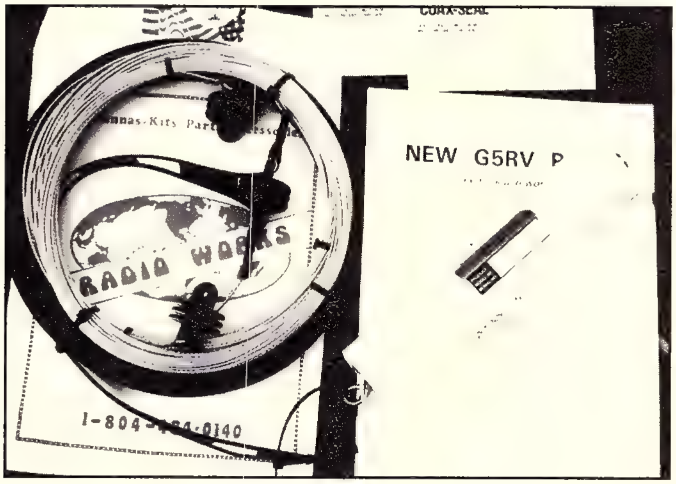
The **Radio Works** company has managed to do so. Somewhere in its manual I note the recommendation to install the antenna at a minimum height of 40 feet (13 metres or so) and to arrange things so that the twin lead comes away at right angles. Ideally, that would mean two towers, more than 34 metres apart and more than 13 metres high. You can run the G5RV as an inverted vee but the Radio Company tells us that "...bending or sloping the antenna will affect the G5RV's matching system. This doesn't mean that your new G5RV plus won't work. It will just tune up differently' (page 6, par 3).

Beautifully put. Indeed, the whole 'manual' has that joyous *Junior Adventure Album for Beginners* sense about it and will provide hours of delight for the uninitiated, should that be your pleasure.

In fact, I chose to utilise the two whacking great gum trees on my property. They are diagonally apart on the yard and, as luck would have it, are at just the ideal height.

For step one, I employed the Robin Hood method to put some nylon fishing line over the trees (one at a time) and, for step two, I dragged up the necessary support cables in place of the fishing line.

The result is a G5RV which is certainly high enough but one which lobs the twin lead right onto the roof of the house.



That is a pity 'cos now the twin lead is not at right angles to the antenna — which is one of the prime requirements.

In addition, if the wind takes the two gum trees in two opposing directions one day, the G5RV is going to have a little problem. Maybe a pulley and weight system... but can I really be bothered?

On air

As I predicted, when I started the SWR was out to blazes. You see, the thing really needs an antenna tuner right at the end of the twin lead. The balun and coax idea is really for people who, like me, detest antenna tuners. I'm stuck with SWR and that is that. The bottom line is this — SWR is only one aspect of an antenna's performance.

On each of the five amateur bands that this antenna is designed for, there is resonance built into the system and a definite electrical reason for the thing to work well.

Raising the antenna high and into the clear improved its performance dramatically, and its SWR came down a lot. So, on the air, the review G5RV worked to specification and did not seem to suffer on the performance front with often high SWR readings. I run the ATU in my HF rig all the time, and it was able to take complete care of just about any return SWR reading.

But let's put it this way — I wouldn't even contemplate buying or building a G5RV unless you have some form of antenna tuner at the shack end of things, because I am yet to find a G5RV which looked good on a SWR meter.

On 80 and 40, the antenna works as well as I could possibly wish. It puts out a whale of a signal and, would you believe, is a great deal better than the full size dipole I had.

That is hardly a fair comparison though, as the dipole was configured as an distorted inverted vee with bits sneaking around corners, through trees and folding back on itself up the fence line (ie — it wouldn't fit into the yard!).

That is the best part of the G5RV — it is a *shortened* compact antenna. On 20, 15 and 10, while it works okay it's nothing like as good as my beam, which is hardly surprising.

From memory, it all works better than my original (300 ohm TV twinlead) version.

The *Radio Works G5RV* is available from *Daycom* and is worth considering if you want 'all the bands' on the one coaxial line.

It is built of quite adequate materials and the factory has made a good job of putting it all together. Watch that SWR though...

**FOR ALMOST 20 YEARS SOME PEOPLE
HAVE BEEN SAYING
AMATEUR RADIO ACTION
WOULDN'T LAST
- AND AFTER ALL THIS TIME SOME OF
THEM WILL THINK THEY'VE
FINALLY GOT IT RIGHT**

BUT WE THINK THAT WE'RE JUST GETTING BIGGER and BETTER

**TURN THE PAGE
AND SEE WHAT *YOU*
THINK!**

PACKET RACKET by John Day, VK3ZJF...

Cynics of the world unite!

Far from the 'flames' and brickbats I expected after my last column I was amazed to find that all but one correspondent agreed with what I had to say and were, with that one exception, supportive of my assertions.

The one who did disagree is, like myself, engaged in selling packet equipment to amateurs. He expressed the concern that potential packet purchasers who read such a negatively-inclined column from someone in as influential position as I occupy, would, in all probability, force them to look elsewhere for their new hobby activity. Sadly, I agree, but at least they will have some idea of the frustration they are destined to experience before they spend their money!

It has often been said to me that, as a commercial operator within the amateur community, I have no right to a publicly-expressed opinion on amateur topics. That on packet radio I should confine myself to talking about purely technical issues and nothing else. Sadly, very few of these critics stop to realise that I have more reasons for seeing a healthy, vibrant and active amateur service than anyone else!

If amateurs are dissatisfied with something, such as the packet network, they don't buy gear and I can't go to the supermarket at the end of the week, and this magazine dies.

The only investment each individual amateur has in his hobby is the few thousand dollars he spends over a number of years on his station.

But those of us who make a *living* out of amateur radio — such as myself and the editor of this esteemed journal — have our entire lives and futures invested in amateur radio. We don't want to hear doom and gloom about regulations and fees, *we* want to hear lots of happy, active amateurs who want to try lots of new things! Then we will sell lots of gear, lots of magazines and have wide smiles on our faces...

9600bps packet equipment

Many recent callers have asked about commercial transceivers which will handle 9600bps packet without modification. Here is an alphabetical list of the ones I know about:

Icom IC-281H (2m)
Icom IC-481H (70cm)
Icom IC-820H (2m/70cm all mode)
Kenwood TM-251A (2m)
Kenwood TM-451A (70cm)
Standard C1218 (2m)
Standard C5718D (2m/70cm)

Interestingly, neither **Alinco** nor **Yaesu** appear to offer a 9600bps-ready radio in the Australian market.

Currently there are four manufacturers offering 9600bps TNCs in this country. Again in alphabetical order, they are:

AEA PK96 9600 or 1200bps
AEA DSP1232 DSP controller
AEA DSP2232 DSP controller

AEA is handled in Australia by **Emtronics** of Sydney and **Kevin Cavanagh** of Ipswich.

PacComm SPRINT-2 9600 or 1200bps
PacComm Tiny-2 with option

The PacComm products are available from **Blamac** in Cooma or **Kevin Cavanagh** of Ipswich.

MFJ1278BQ All mode with 9600bps
MFJ1270CQ 1200 or 9600bps
MFJ1276Q 300, 1200 or 9600bps with PacTOR

MFJ is represented in Australia by **Daycom** of Melbourne.

Kantronics KPC-9612 1200 and 9600bps dual-port
Kantronics Data Engine

Kantronics is also represented by **Daycom** of Melbourne.

Projects happening

As a result of the last Packet Racket column I was also contacted by a number of people working on new things in the Australian packet radio community. It is always nice to hear of things happening around the packet arena.

Several groups report that they are working on **wormholes**. One group each in Launceston and Hobart look like they will bring two wormholes to Tasmania very soon now. It would appear that Launceston is close to operational, the group having finished its initial testing phase already.

A group in Melbourne has been working on an idea for a **9600bps network** on 70cm, using 10GHz linking. Some trials have already taken place, but much needs to be done before the system can be brought to life. They may need some volunteers soon, so keep a watch here for calls for help.

Protocol development

For some years now, it has been said that AX.25 is not the ideal protocol for network backbones and high-speed systems. With this I would have little argument. Whilst AX.25 has served us well at the 'bottom' level of packet for over 10 years now, the time has come for alternatives to be considered.

Much work has been done over the years on the development of theories which might result in the production of new protocols. Sadly, little has resulted from this work so far.

NET/ROM has been used at level three as a routing protocol for some years, and although I believe it was intended that it was the foundation of a newer system, nothing has ever materialised.

Likewise, ROSE was supposed to be part of a much larger and more comprehensive suite of protocols, but likewise, nothing seems to have developed in this direction either.

TCP/IP, or the **Internet** suite, seems to be the way everybody is going at the moment. But despite the fact that Internet usage outside amateur radio has grown astoundingly over the last year or two, we have not seen the same development within the amateur fraternity.

I suspect it is largely due to the fact that TCP/IP does not 'fly' when used over 1200bps systems! You really need to be using 9600bps to see anything useable out of NOS.

What a lot of users have not realised is that you don't need to run NOS to use TCP/IP for packet radio. I believe that LINUX, a $49.95 freeware UNIX clone, has packet radio drivers available for the TCP/IP support built in to the operating system.

I understand that the same applies to the UNIX BSD versions.

Perhaps some UNIX users amongst our readers might like to let us know what is happening in the UNIX TCP/IP world?

Having said that, I suppose I should point out that many non-amateurs use the KA9Q NOS product, in one of its many incarnations, for other than amateur radio pursuits.

It is very common to see it used as a router for simple networks because it supports a far wider variety of interfaces than many other TCP/IP products, being able to offer SLIP, PPP and Ethernet simultaneously as well as supporting FTP, Telnet, SMTP and a few other popular applications as well.

See you again soon... John.

AMONG OTHER THINGS -

*IT WILL NOW HAVE 100 PAGES
* IT WILL HAVE HEAPS OF NEW FEATURES
*YOU CAN EVEN WIN THAT SCANNER

*OH, IT'S ALSO CHANGING ITS NAME!

After close to 20 years we've decided that
it's time for ARA to broaden its scope
- while, importantly, not losing its direction.

To provide a wider spread of news and
information to amateurs and hobby communicators, Amateur Radio Action is to
combine with its sister publication CBA to become
"Radio and Communications" - 100 pages per month, cover price still just $3.95 -
with the first issue due to publish on 27 June.
The next (June) issue is the last of
ARA in its present format.

Electronic communications are assuming an ever increasing part of amateur
operations - computers, modems, internet and bulletin boards all now play a part in
the life of most amateurs.
Many amateurs are also spending time listening to scanners, airband radios, SW and
utilities while others experiment with satellite TV, weather satellites, etc.
These interests are also shared with thousands of hobby
communicators who do not necessarily yet posses an amateur licence
- although of course many do...
By combining ARA with CBA you will continue to receive all the editorial
material you now receive in ARA - BUT - you will also receive the electronic
communication's type editorial now published in CBA.

Just think of it as receiving an extra 40 pages of information a month *(for no extra money)* without losing anything that you now read in ARA.

All the usual material - reviews, DX info, packet, projects, technical, UHF/VHF,
classifieds, general amateur articles will still be there...plus 40 pages.

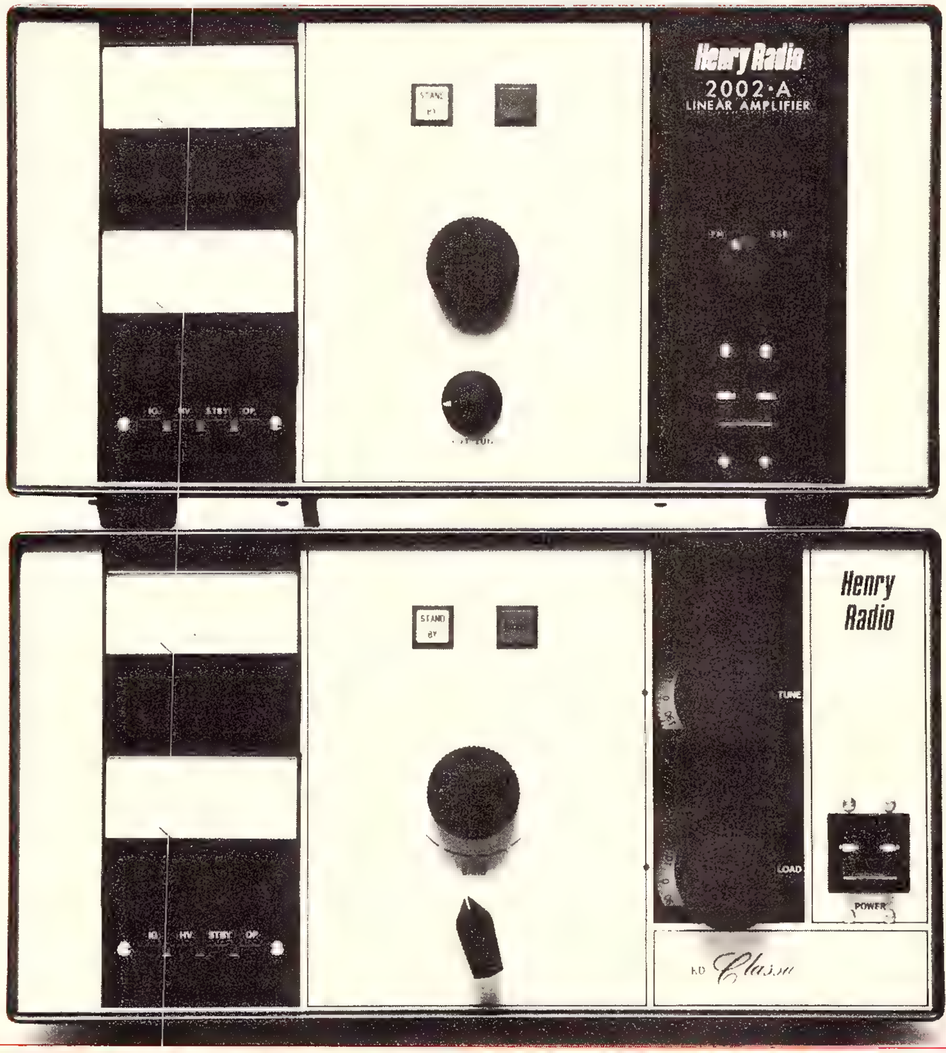
To really labour the point - you'll get everything you now get in ARA
- plus an extra 40 pages - that beats a licence fee increase doesn't it!
Look out for it at your newsagent on 27 June.

RADIO *and* COMMUNICATIONS

'TWO HENRYS WITH THE LOT TO GO PLEASE"

(or Jeez, they build 'em big and powerful in America)

Tested by Christopher Davis, VK1DO



The opportunity to get my hands on these amplifiers was too good to miss. Ross Keogh, from *Strictly Ham* in Melbourne, offered to supply one of each for my appraisal back in December, and by late January they were firmly ensconced in my radio room. (I can't call my room a 'shack' any more. Now that these handsome Henry boots reside there, the term shack just doesn't seem acceptable.)

I must say from the outset, seeing is believing. Struggling to make a judgement on the elegance of a product based on a fax sheet is impossible. Compared with a typical VHF transceiver, it is David and Goliath in terms of size.

Their presence can only be described as imposing.

There are very good reasons why it is worth striving to run the legal limit on VHF and above. The idea of high power on VHF/UHF is not so much to be heard louder, but just to be heard in the first place. Many well-engineered stations, using high-gain arrays and top-class low noise receivers, can equalise deficiencies at the other end with the help of the full legal limit.

When station antenna gain is at its practical limit (ie what is up there hasn't yet blown down), running the legal limit is the icing on the cake.

The options for amateurs wishing to run 400 watts on VHF, apart from those clever enough to build their gear or go solid-state, have been somewhat limited.

For 144MHz, there have been various models of commercial amplifiers using 4CX250 tetrodes and, for UHF, some valve amplifiers using a single 4CX250. Without a pair of 4CX250s, it is not possible to reliably obtain the full legal limit in linear service.

Solid-state is certainly a convenient and relatively cheap option for up to about 200 watts on UHF.

To go to the legal limit involves more than one module and quite involved power combining techniques, as well as a pretty serious high current supply.

To obtain the legal limit, solid-state, would cost nearly as much as a commercial valve amplifier from Henry. I doubt that your long-term reliability would be as good as the valve solution.

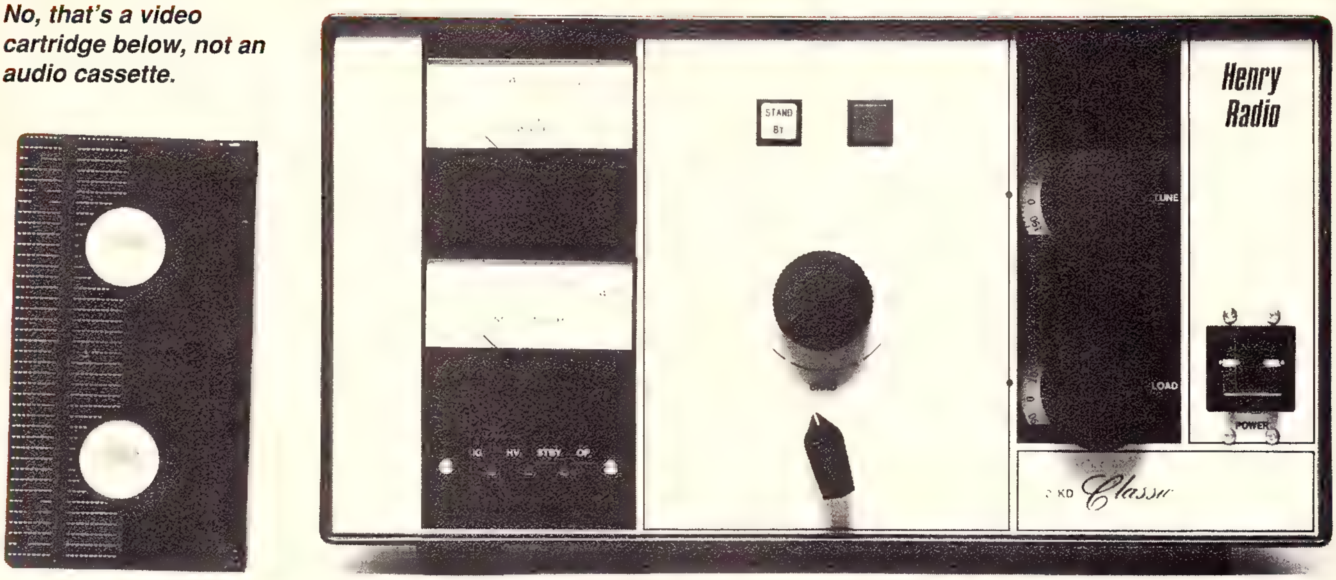
The valve used in both the 144 and 432MHz models is an Eimac 3CX800A7 ceramic triode.

According to the Eimac specifications, this tube is readily capable of 800 watts output up to 350MHz with only moderate drive.

Although Henry rates its amplifiers as capable of more than the Eimac rating, I would question the potential longevity of the tube particularly in EME operation, which is the only application where a special high power permit might be granted, requiring the full capacity of the amplifier.

So why use an amplifier capable of more than

No, that's a video cartridge below, not an audio cassette.



our legal limit? To start the tongues wagging, or maintain a squeaky clean signal amongst a crowded VHF community, as well as sustaining long valve life?

At about $800 per replacement, you might see some sense in this approach. Correctly tuned, limited to our legal limit, I don't expect to replace a valve inside 10 years. (And those who own Ferraris or Porsches don't necessarily break the speed limit every time they drive, despite having the potential to do so...)

The popularity of passive grid tetrode amplifiers, particularly amongst experimenters, is partly the ready availability of the valve, as well as the low drive requirements. A pair of 4CX250s will produce the legal limit from as little as a few watts. Tetrodes require rigorous construction in terms of shielding and sophisticated screen supplies. Ironically, grounded grid triode designs offer a more forgiving design by virtue of their natural negative feedback, but often require high power to drive.

The modern Eimac triodes, such as the 3CX800, are remarkably suitable for amateur use, requiring less than 20 watts of drive for the full legal limit. This is readily compatible with modern transceivers or the typical output of a transverter employing a Mitsubishi module in its output stage.

Now to the nitty-gritty of how these 'grunters' stacked up...

The packaging that Henry crates these amplifiers in is an inspiration to start with. The amplifiers weigh in at 36 kilograms, so the packaging must withstand some potentially-serious inertia in the event of a drop.

The amplifiers are shipped with the ceramic triode installed, tapped for 240 volts minus power plugs. The build quality of these amplifiers would be best described as commercial grade. If you have had experience with military-spec equipment built with overkill, then this gear will seem 'light' by comparison, but sensibly-designed.

Much of the fanatical protection circuitry and fail-safe features of continuous duty amplifiers are absent, however with correct use I see no reason to criticise the price/performance approach the manufacturer has adopted. Certainly, the stripline construction, the final compartment and the efficacy of layout make this gear well beyond the average home constructor. The amplifiers do not include a reflectometer or power meter, probably due to cost. If you want this amplifier, you can afford a Bird Thruline...!

The first test prior to applying drive was to confirm that the filament voltage was within specification. These superb valves are prematurely ruined by excess heater voltage, which must be within the range of 13.5 volts, plus or minus 0.6 volts. The primary of the power transformer offers a wide range of incremental taps to accommodate the potentially-wide range of mains voltage in different regions, even within one city, let alone different countries.

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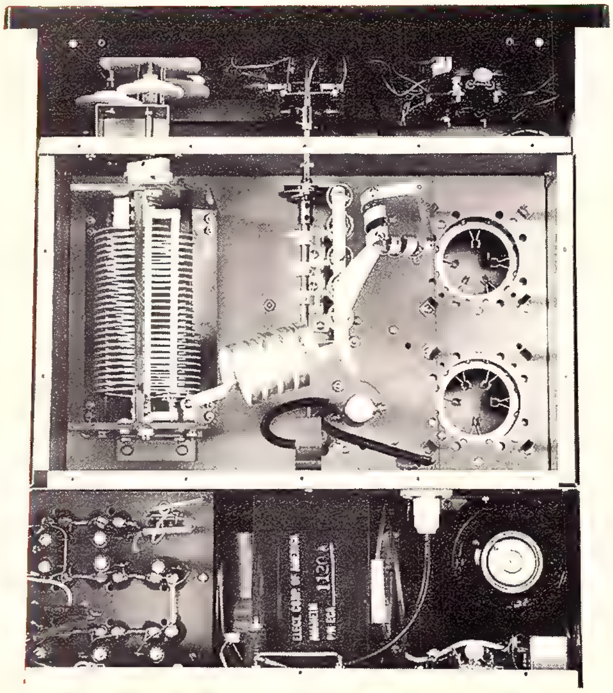


'TWO HENRYS WITH THE LOT TO GO PLEASE"

(continued from previous page...)

A specially-designed transformer is employed to limit the filament inrush current to no more than twice the running current, dispensing with complex control circuitry. My supply produced heater voltage right in the middle of the specified range.

Eimac is most emphatic regarding heater voltage, three minutes warm-up and, ideally, no application of plate voltage prior to warm-up. These amplifiers apply plate voltage immediately, but do not allow key-up prior to the warm-up time.

I imagine Henry researched this approach and concluded that the relatively high cost of interlocking the high voltage was not warranted. The filament transformer and HT supply are common, making separate HT interlocking fairly delicate.

The plate current meter, which actually operates within the cathode circuit, has a rear panel calibration pot. A check on the meter found a slight adjustment brought the meter to spec, and the grid current meter was found to be smack on. A test of the feed-through loss on the two metre amplifier showed a loss of around half a dB.

I was curious to discover whether the antenna relays were responsible for this, however closer examination found that a low-pass filter was creating the loss. This filter need not be left in circuit — rather, it can be reconfigured to only be in the path of the output stage prior to the relays.

A peculiar oversight, but easily remedied. Feed-through loss on 70cm was negligible but, ideally, this ought to be irrelevant with a masthead preamplifier and isolation relays.

Initial tuning of the amplifier was quite straightforward, and with only a couple of watts of drive it tuned up as expected. The 2004 incorporates a tuneable filter on the rear panel.

This should be adjusted just with exciter power prior to operating the amplifier. The manual makes no mention of this precaution, but failure to tune this filter would result in considerable drama and fireworks.

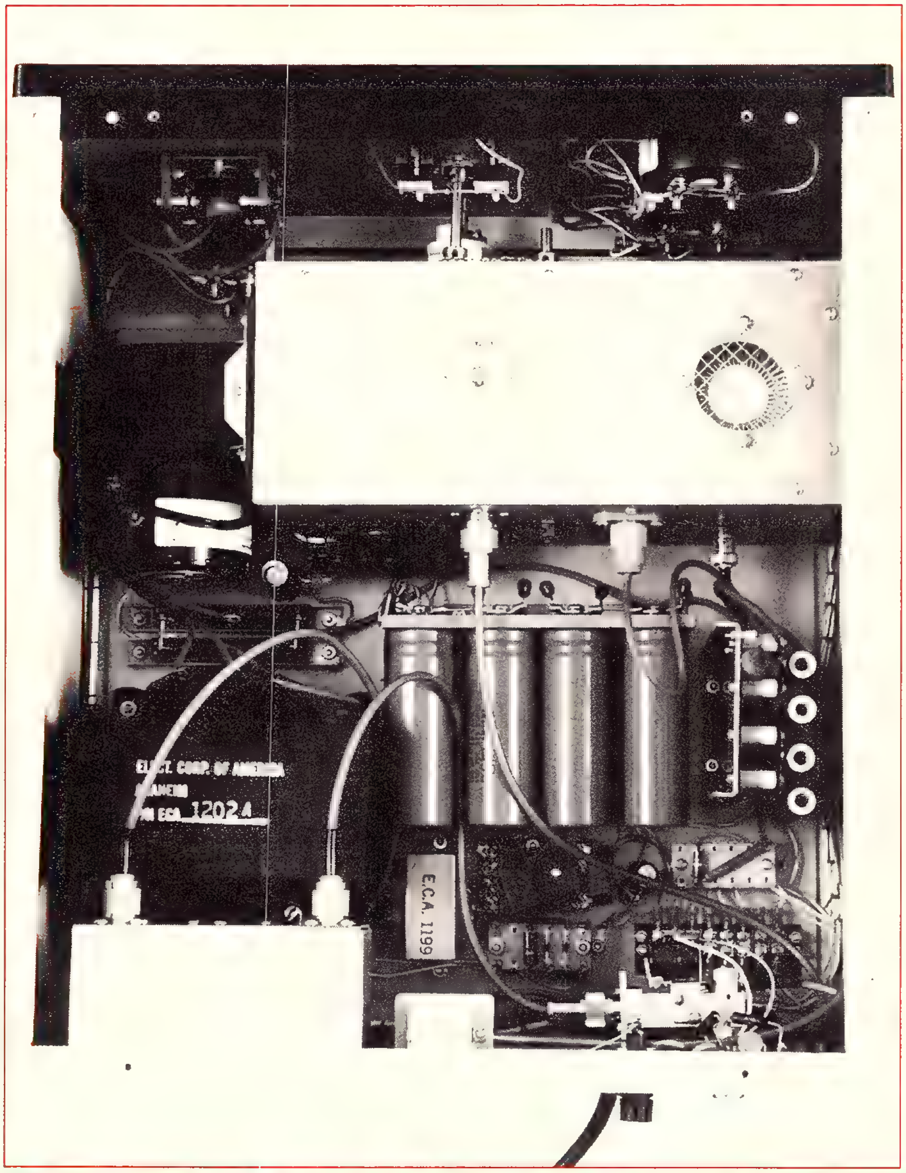
The filter is, in my opinion, too coarse in its adjustment and deserves a reduction drive to facilitate and secure adjustment. The operation of the plate tuning is by way of a chain-driven coupling, and exhibits slight backlash which takes a little time to master. Providing you have no prying hands to contend with, this would only require checking from time to time.

The input tuning control adjusted smoothly for minimum reflected power. This is obviously a well-made input tuning circuit with reflected power able to be adjusted well below 1.5:1 on both models.

This factor is very important. Ignoring the effects of loss or output power reduction in many commercial transceivers, the intermodulation distortion of solid-state output stages deteriorates rapidly in the face of a poor match.

Henry is very conservative in its estimates of drive requirements for both amplifiers.

I don't have sufficient experience to speculate on whether this is to accommodate wide tube variation (which I would doubt), variations in the efficiency of the strip-line circuit, or just a generous margin for readily exceeding advertised specifications.



A fine example of America "iron" - built big and solid - like their cars.

This is a trend in America, where products destined for the US market are often found to comfortably exceed advertised specifications due to the rigorous nature of their litigious society.

An examination of the claimed specifications and my results suggests that the power gain of these amplifiers, estimated as 13dB, is as high as 15dB for the 2002 and close to 13dB for the 2004. This makes them ideal companions for existing gear running up to 20 watts output.

If your equipment runs markedly more than the nominal power, then there are a few precaution worth noting. Beware of relying upon some drive level controls.

Firstly, having a drive level control as your governor is a potential loose cannon.

Apart from exceeding the legal limit, the best way to destroy an expensive triode is excess grid current.

Secondly, many of the modern transceivers have a drive level control which operates within the ALC network of the radio.

Potentially, its role in holding power at a specific level means that the full output of the equipment is potentially available, even though for a short burst, prior to the power being trimmed back. This is quite difficult to determine in routine testing, however some operators of high power equipment have attributed unexpected valve failure to this syndrome.

The changeover relays within these amplifiers require about 200mA to be switched to deck, which is far more than most commercial rigs will sink.

Given that an additional transistor is required, I would recommend that you include some sort of sequencing control circuit to guarantee that the amplifier is *never* hot-switched, and that your expensive preamp is well out of circuit prior to potential cooking.

The amplifiers incorporate an excellent forced-air cooling system, quieter than any other linear I have used. Many blowers make headphone operation imperative, however the background white noise is quite acceptable.

Below are the Henry specifications which under test were found to be conservative in all areas.

I had no opportunity to do accurate IMD tests, however the general acclaim from nearby amateurs confirmed that the amplifiers are socially very acceptable.

Providing your prime mover is clean, running the legal limit ought not create any problems.

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SPECIFICATIONS

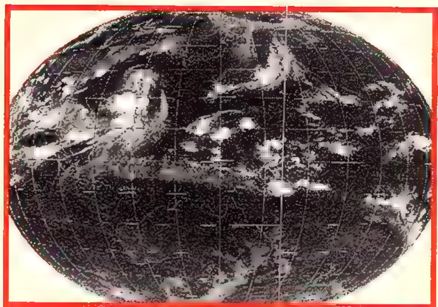
The following specifications were confirmed for both the 2002 and the 2004:

Output power:	maximum 1000 watts pep, Eimac spec 800 watts, tested to 700 watts on both bands. 500 watts continuous rating.
Tube compliment	3CX800A7.
Plate voltage	2,200-2,600 volts depending on load. Forced air cooling.
Frequency coverage:	144-148MHz and 430-450MHz with 1.5 per cent bandwidth prior to immediate retuning.
Output impedance	50 ohms with less than 2.0:1 SWR.
Input impedance	50 ohms, SWR below 1.5:1.
Noise level	>40db below single tone carrier at 1000 watts
Harmonics:	second harmonic >60dB down, third order distortion >35dB down at full output. Eimac IMD specs: 3rd order -36dB, 5th order -32dB.
Drive	power required for Australian legal limit, as measured: 2002 = 15 watts, 2004 = 20 watts, with efficiency greater than 50 per cent.
Connectors:	BNC input, Type-N output, RCA socket for tx relay, 12 volts 200mA.
Metering:	Two panel meters monitor plate voltage, plate current and grid current.
Controls:	FM/SSB switch, tune control, function switch and circuit breaker control switch. Filter tune, 2004 only.
Protective devices,	primary AC fuse, primary circuit breaker and cathode fuse.

Changeover relays are a combination of coaxial and guardian relays for both input and output changeover.
Cabinets are all-aluminium providing double shielding in the RF section for minimal cabinet leakage and radiation.
Single-ended stripline plate circuit, silver-plated.
Accessories include BNC cable to PL259, comprehensive instruction manual, schematics and valve data sheets.

CONCLUSION

Excellent value for money and a neat long-term solution to running the legal limit durably.



WEAFAX SATELLITES

By Arthur Andrews
Araluen Road, Wollar 2850

January and February were good months for weather satellite enthusiasts, with excellent pictures being received from the new NOAA 14 and the Russian Met 3/5 satellites.

The NOAA 14 Channel 4 infrared images were particularly good, enabling comprehensive studies of land and sea temperature gradients and variations to be accomplished. The Murray/Darling River systems were easy to identify on cloudless days and the Macquarie and Murrumbidgee systems were also clearly shown.

Several readers have mentioned that they get little, if any, resolution with infrared images, saying that the images are very white with very little detail. There are probably several reasons for this, but I feel that the possible cause is that they have their audio input too high in an attempt to get brighter Channel 2 Near Visible Light images. Increasing the audio certainly does make Channel 2 images brighter and more pleasing to look at, but to the detriment of the Channel 4 images which will appear white and washed out.

The input should be set so that *both* images show a clearly-defined segmented grey scale at the side. Sure the Channel 2 image will be darker, but it can always be brightened by enhancement techniques included in most satellite receiving programs after the pass has been captured. If the grey scale is set right you will get interesting and meaningful infrared pictures.

Also, as I have said before, your receiver should be of the correct IF bandwidth to obtain the best pictures.

An unusual problem was experienced during mid-January when both NOAA 10 and NOAA 12 were in view at the same time and transmitting on the same frequency of 137.50 MHz. Normally, when two satellites clash, one of them is switched off by the ground control station, but for some reason this was not the case in this instance. The situation only lasted a few days until the satellites moved further apart. With an omni-directional antennas like the turnstile or Lindenblad, nothing much can be done to alleviate the problem. The only way out of it is to point a high-gain antenna like a Yagi at the satellite of interest and track it across the sky.

For some weeks now, NOAA 10 has been transmitting Channel 1 images instead of the normal Channel 2. The reason is not known, unless they are experiencing trouble with the Channel 2 sensor.

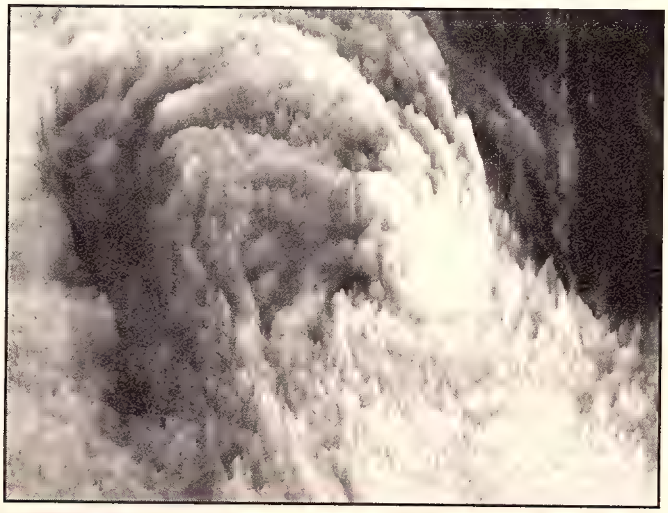
I managed to capture an unusual image from NOAA 10 one evening just before sunset. The sun was reflected from the Murray River in South Australia and stood out in stark contrast to the already-darkening land mass.

I mentioned tracking earlier. Has anyone out there got an az/el rotator which they want to dispose of at a reasonable price? If so, I would be very interested to hear from them as I want to start on a HRPT receiving station.

Tropical Cyclone Bobby crossed the coast of West Australia in late February, and tragically took the lives of several fishermen. Bobby, though not as spectacular as some, still had the destructive force of the cyclone that wrecked Darwin 20 years ago. We tracked it daily on GMS 4 but did manage to capture some orbiter images as well.

As you have probably already gathered from my articles, I am very interested in satellite imaging and enhancement. A few months ago Mike, VK2ASR, sent me a CD-ROM produced by the CSIRO called 'AusWatch', and it turned out to be the most interesting collection of satellite pictures of Australia that I have ever seen. The CD-ROM contains over 160 high-resolution images taken from the Landsat, Spot and NOAA HRPT satellites. The software also includes enhancement features to encourage you to make your own satellite landcover interpretations.

One of the fascinating features is the comparison of pictures taken of selected areas back in the 1970s to pictures taken of the same areas 20 years later. It certainly is an eye opener.



Satellite pic of Cyclone Bobby off the WA coast.

For some unknown reason Mike wanted his ROM disk *back*, and despite me calling him an 'indian giver' and other choice phrases not printable here, he insisted on having it back. Not wanting to experience withdrawal symptoms I contacted the CSIRO and ordered a copy which duly arrived. Even after six weeks I have not yet been right through the disk.

I also found that CSIRO has published a book called 'Looking Back', sub-titled 'The Changing Face of the Australian Continent 1972-1992'. The book, which measures a massive 30cm x 40cm and has 160 pages, is a companion to the AusWatch CD-ROM, and contains many of the pictures that are on the CD-ROM.

The book is designed to be laid out on a table so that separate images of the same locations taken 20 years apart can be compared with ease. The two images are then combined, which graphically shows the changes which have occurred to vegetation etc. I can highly recommend the book, or the CD-ROM — or both, for that matter — to anyone who is interested in the satellite imaging of our own country. The CD-ROM is designed to work on PC or Macintosh computer systems.

I was very pleasantly surprised at the price considering the wealth of information contained in both items. The CD-ROM costs $25 plus $5 postage, whilst the book costs $40 plus $10 postage. For further information contact COSSA, GPO Box 3023, Canberra, ACT 2600.

For sale

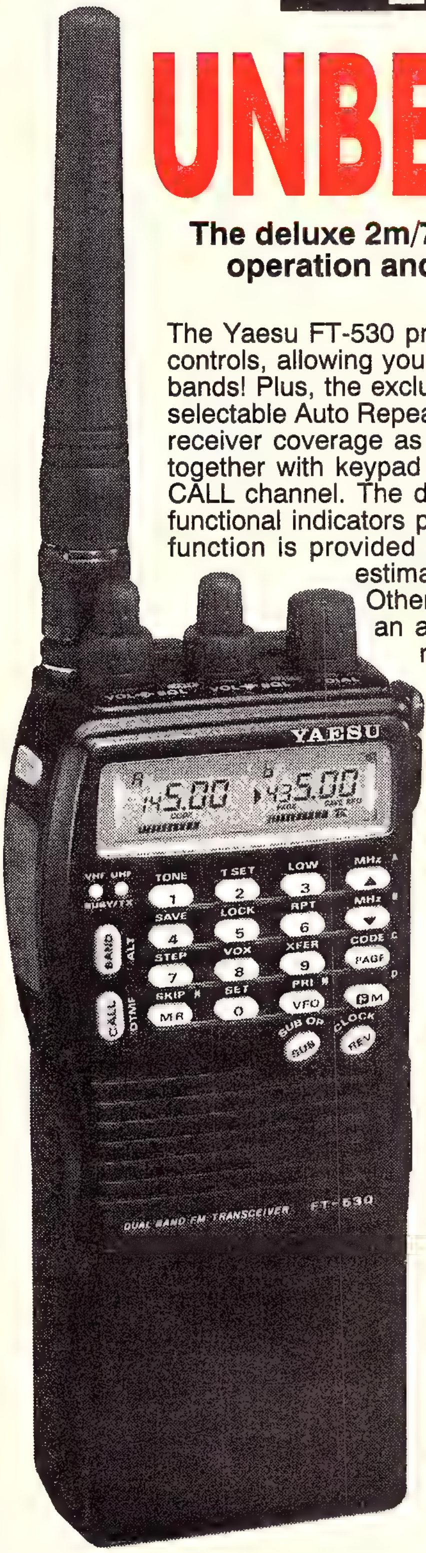
I have three 'starter packs' for orbiting satellite reception consisting of a modified PRO-2025 16-channel scanner, expansion slot decoder card and software — the lot $350 each.

See you next month.

DICK SMITH
ELECTRONICS

UNBEATABLE VALUE!

The deluxe 2m/70cm dual-band hand-held Transceiver that offers easier operation and more features than ever before is still available at an unbelievably low price!



The Yaesu FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven selectable tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen is back-lit for easy viewing and includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provides VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows simple transceiver powering and NiCad charging, with RF output in four selectable steps up to 5W at 12V. The FT-530 comes complete with an ultra high-capacity 1000mAH NiCad battery, belt clip, carry case and approved AC charger.

Cat D-3620

Specifications

2 Year Warranty

Frequency range:	
Transmit:	144-148MHz, 420-450MHz
Receive:	130-174MHz, 420-500MHz, 800-950MHz
Current consumption:	
Auto power off	150uA
Standby (saver on)	16.8mA (both bands)
Dimensions:	55(W) x 163(H) x 35mm (D)
Transmitter:	
Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output:	2.0W (2m) 1.5W (70cm) (Supplied 7.2V 1000mA/H NiCad)
Receiver:	
Sensitivity:	2m: < 0.158uV, 70cm: < 0.18uV (Ham bands only, 12dB SINAD)
Selectivity:	>60dB
Audio Output (12V):	300mW at 8 ohms (at 12V)

YAESU

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Whether you're going bush or operating around town, a quality mobile transceiver from Yaesu delivers the best performance.

FT-2400H Rugged 2m Transceiver

The ultimate in dependability and reliability! The FT-2400H is built using commercial grade mechanical and electronic construction techniques and meets the tough USA MIL- STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two-stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, and priority monitoring.Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic., mobile mounting bracket and DC power lead.

Cat D-3630

$649

2 Year Warranty

Specifications

General

Frequency range:	Transmit 144-148 MHz Receive 140-174MHz
Channel steps:	5, 10, 12.5, 15, 20, 25 & 50kHz
Current Consumption:	Receive: 400mA Transmit: 12 Amp (Hi power)
Dimensions:	160 x 50 x 180mm (w/o knobs)

Receiver

Intermediate Freq:	21.4MHz & 455kHz
Image Rejection	Better than 70dB
Maximum AF Output:	2.0 watts into 8 ohms @ 10% THD

Transmitter

RF Output power:	50/25/5 watts (Hi/Med/Low)

YAESU

Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceievers. Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large back-lit LCD screen, two independant VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD). Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation. An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

YAESU

Cat D-3275

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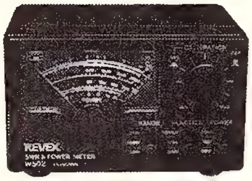
)W & 200W power scales. Revex model
'540.

Cat D-1370

$199

With PEP Reading!
HF/6m Power/ SWR Meter

A quality wide-band SWR/power meter with accurate PEP metering. Manufactured in Japan, it's very well constructed with an all-metal case. Features include a large, back-lit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC at 200mA. Revex model W502

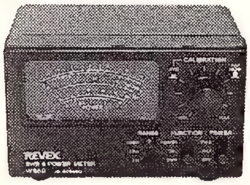


Cat D-1360

$199

Revex W560N HF/VHF/UHF SWR/PWR Meter

Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.



Cat D-1375

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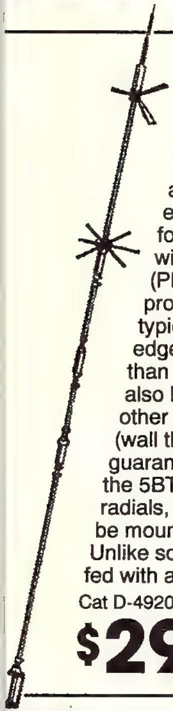

Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV is a 5-band HF trap vertical which continues the Hustler tradition of quality and performance. It incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1 kw (PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, < 2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike some other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

Cat D-4920

$299

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2m/70cm Mobile Antenna

The ST-7500 is a high-quality medium-sized dual-band antenna that uses a ground-independent design and tiltable stainless steel whip structure to provide excellent mobile results. It's just 1m long, yet provides approximately 3dB gain on 2m and 5.5dB on 70cm with a maximum power rating of 150 watts. Requires an SO-239 antenna base or SO-239 magnetic base.

Cat D-4810

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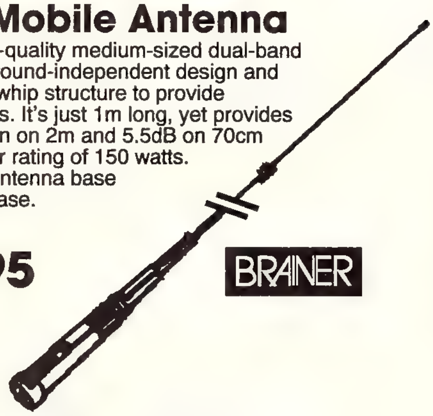

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Cat D-4815

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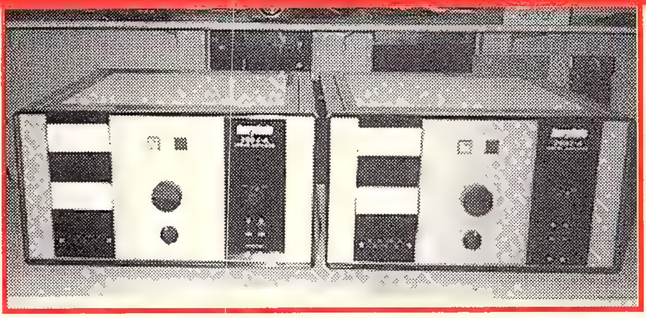

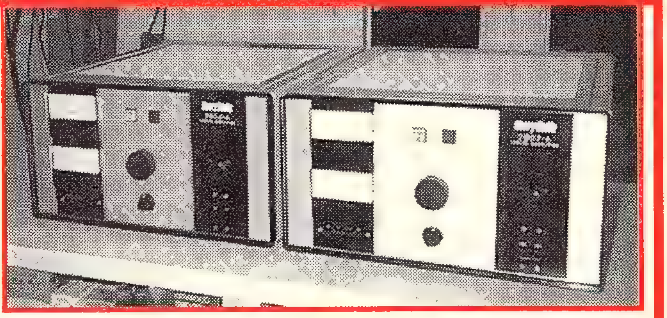

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GONE TROPPO... by Christopher Davis, VK1DO

Why, when we are so easily able to go to the field, are we so devoid, relatively speaking, of massive field day activity?

If you think my opening paragraph is now being contradicted, consider the following: 30 years ago, going into the field involved carrying your equipment in trailers; heavy-weight power generation; much more preparation; faith and hope to work real VHF DX; less-proven antenna design; crude receiver noise figures and unreliable frequency accuracy with consequent difficulty in accomplishing contacts that we now routinely enjoy.

My earliest memory of field day, at age four or five, was steadying an AM transmitter, belonging to my two eldest brothers, in a boat as it was laboriously rowed to an island in the middle of Canberra's lake Burley Griffin ready for the novelty of becoming an IOTA. (Island on the Air!) This might have seemed crazy but it was typical of the tenacious field day spirit in those times.

What has happened to the spirit of adventure? This is a question which is asked by many older amateurs who cut their teeth on field operation. Many of those who did tread the path to hill-top locations, in more challenging times, are justifiably enjoying the comfort of their well equipped home-stations. Where are the innovative, enthusiastic go-ahead young experimenters only needing to drive to the local tourist landmark with a single Yagi and a 12 volt-operable multi-mode transceiver?

Specifically, in many cases, they have been so sadly lacking in leadership and encouragement that they are blatantly unaware of the concept. In other cases, resources of encouragement, camping equipment and organisation are so fragmented that few field stations ever reach the planning stage, let alone the top of a hill!

Our hobby enjoys, through the auspices of the devolved examination system and the regular courses and classes, more than adequate opportunity to lead, inspire and motivate our up-and-coming experimenters in positive directions. Don't tell me there are no newcomers; we see them buying loads of those infernal walkie-talkie FM crystal sets!

There is a *massive* hiatus between the tired, fatigued and retiring ex-field day personnel and the fresh and patently enthusiastic young blood just crying out for guidance, inspiration and direction. Some of these young blokes can even climb trees!

Please let me steady my walking stick as I climb down from the soap box. Come to think of it, what about these excessively-complicated, ludicrous contest rules? If recipes for beginner cooks were as involved as these field day rules, bachelors and spinsters would be starving to death all over the place.

If you have been put off by the foreboding nature of contest rules in Australia, put pen to paper and remonstrate. Have you read the introduction to some contest and decided that it looked like the code to some secret society? Don't worry! I have been in the same contests for 22 years of being licensed and *still* don't claim to know the rules! They are so complex that their authors regularly foul them up when they are first published. They look more like the taxation legislation!

Let's get some simplification. Some standardisation. Some inspiration. Rules that spend time spelling out promises of disqualification and penalisation and not the pride in 'having a go' have lost the plot. Contest rules, like filling in forms for census, loans, tax (and, probably, Forms For Wanting Never To Fill In Any More Forms) are all becoming too involved.

"Log sheets can be sent in on any disk, in any database format," the rules say. Shortly, judging by the cynical attitude that our amateur operators hold toward contests, you will be able to include mental telepathy in the list of media suitable for submission and still be devoid of participants and logs. Why?

The John Moyle Field Day contest saw many enthusiasts take to various elevated sites and make an effort to extend the horizons of VHF, despite some hectic weather and flat conditions. Congratulations and admiration for those operators and their support teams who took their spare time to culture VHF DX and field day activity.

We have outsmarted ourselves. We have only a few specifically VK contests — the January VHF field day, the John Moyle field day, the RD Contest, the novice contest to name just the well-known nation-wide contests.

Do you know the rules for each? Are VHF points scored consistently? What is the permitted regularity for VHF repeat contacts? Is there an incentive for being a regular operator throughout the contest, home and field? I am not surprised, considering the complexity and inconsistency of the rules for various contests, that many operators just quietly retire from participating assuming that other more experienced operators are more adept at 'this' one. They might be right! The trouble is, by the time the contest is confined to those who understood the rules, you will have worked everyone available in the first few hours of the contest.

Another factor, a hangover perhaps from contests which require a full sweep of available short and long path HF propagation to all parts of the world, is the preoccupation with running 24 hours. Our field days, I believe, would be more well attended if the kick-off were around 0600z running until 0000z the next day.

If you are scratching your head, that's 4pm EST Saturday afternoon until 10am Sunday morning. I doubt that much potential would be lost from this minor reduction in actual contest time. Probably, concentration during periods of propagation would produce some spectacular activity. A few more spouses might be allowed to go into the field too, knowing that the entire weekend wasn't absorbed.

Let's use the same enthusiasm that amateurs proved they were capable of in the realm of license fees to address an equally important facet of our hobby. Good contesting.

Write to the WIA contest manager and suggest how much more enthusiasm you could find if each contest had consistent, simple rules.

Suggest the importance, now that we have arrived kicking and screaming into the realm of the twentieth century, of contest durations that needn't wipe you off the face of the earth for a day, both during and after. You worried about the cost of your license, now get some value and enjoyment for your contest time!

If you think these suggestions are too liberal and perhaps making entry too widely available to everyone, consider this: Why are contests, within Australia, lacking participants? Because the complexity of rules and inconsistency of rules makes contesting the domain of a fanatical few; the draconian emphasis on disqualification is inappropriate to a hobby; the hours, despite the provision of six-hour sections, only suit the minority of totally dedicated, bachelor and spinster types or divorcees in the making.

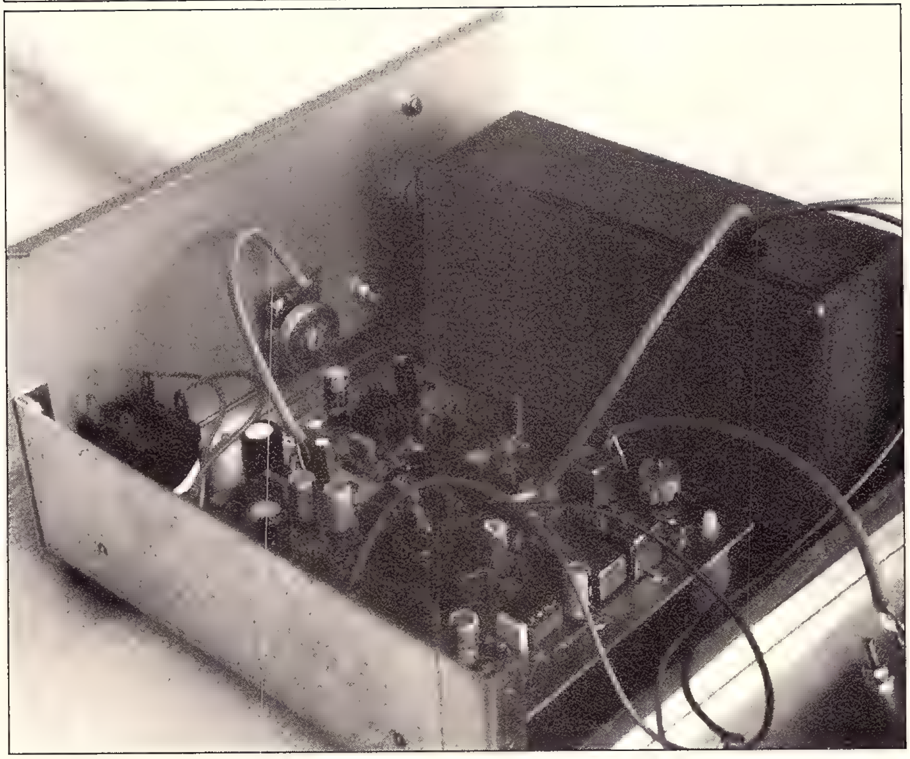
If you would like to see yourself in more contests, enjoying them in a relaxed and carefree manner, write to the Federal Contest Manager of the WIA and *say* so. Let's get back to the point where participation; lots of stations; polished operating skills with strong adrenalin flow replacing the fatigue that accompanies the perennial discussion of 'where is all the activity?' that seems to abound during much of each contest.

If you see some sense in my suggestions or have some of your own, bear in mind that the current sets of complex rules ought not be joined by a set of incomprehensible additions. Stick to simplicity that de-mystifies our contests.

All of our VK contests require streamlining and, ideally, total compatibility. Write, with your positive suggestions on increasing activity and ease of participation in VK contests, to: **Peter Nesbit, VK3APN,**
Federal Contest Manager,
C/- Wireless Institute of Australia,
PO BOX 2175,Caulfield Junction,
Victoria 3161.

Build a 15M direct conversion receiver

Part Two. By David Silvester, G4TJG



Part one of this project appeared in the last (April) issue, however, due to the late inclusion of an article on the much-debated licence fee increases by Judicious Rex we were obliged to hold most of the necessary diagrams - and parts list - until this issue. Our apologies for any inconvenience.

The antenna

The aerial used by the author is a very simple affair indeed. My back garden is just long enough to take a 20 metre dipole on the diagonal, so for the 15 metre receiver, a basic dipole antenna was set up with longer guy wires.

I'd suggest you make your antenna from the strong PVC-covered copper wire which is available from just about any local radio shop. In the center off your dipole add an insulating unit and connect your feeder there.

I'd suggest a section of 75 ohm twin feeder which can fit through the window seal without damage. Between the feeder and the coax to the radio itself is a simple balun unit. This consists of a torroidal ferrite core T72-26. The core is wound with a pair of 26SWG wires which have been twisted together. To one end pair is

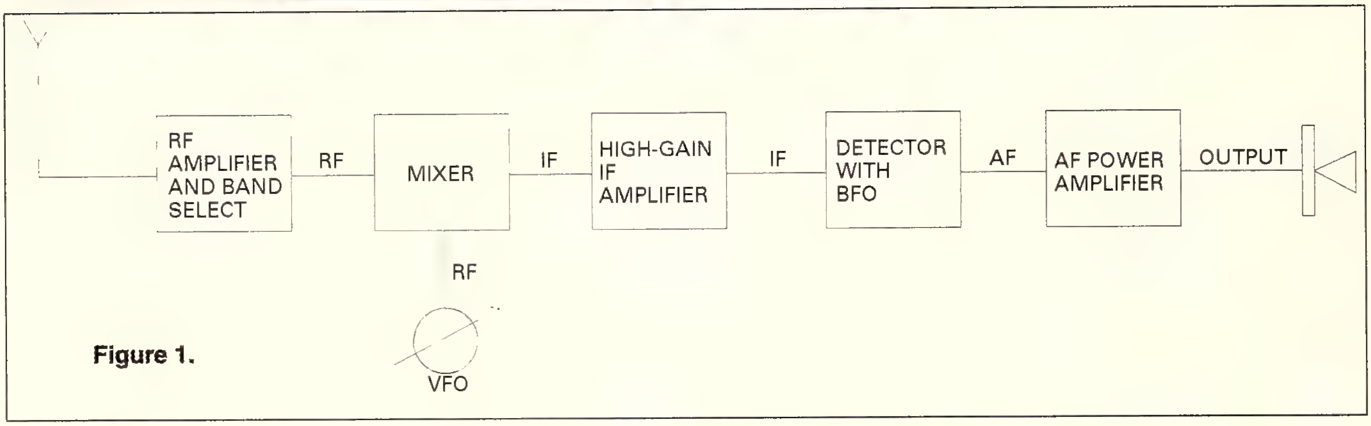


Figure 1.

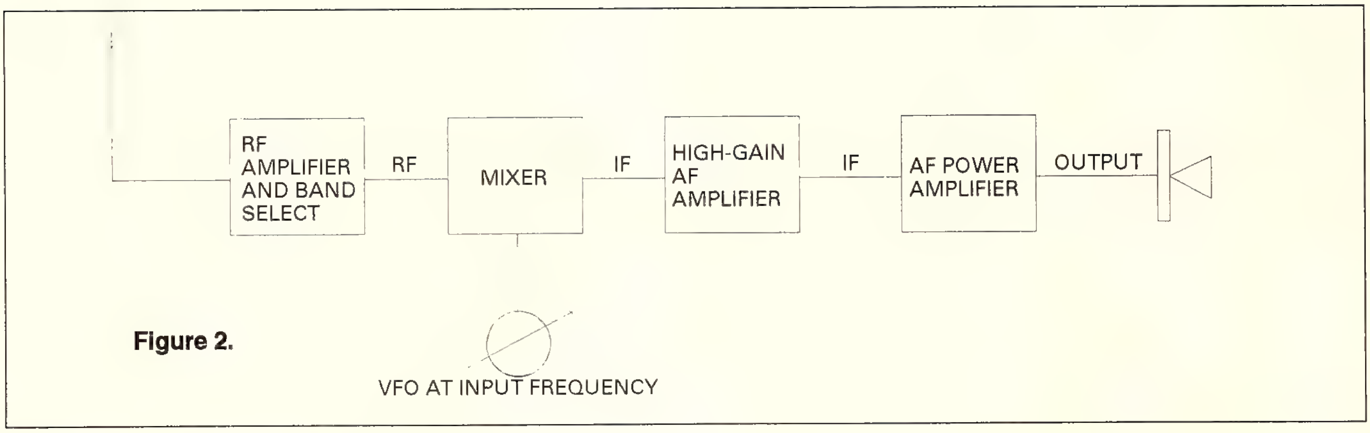


Figure 2.

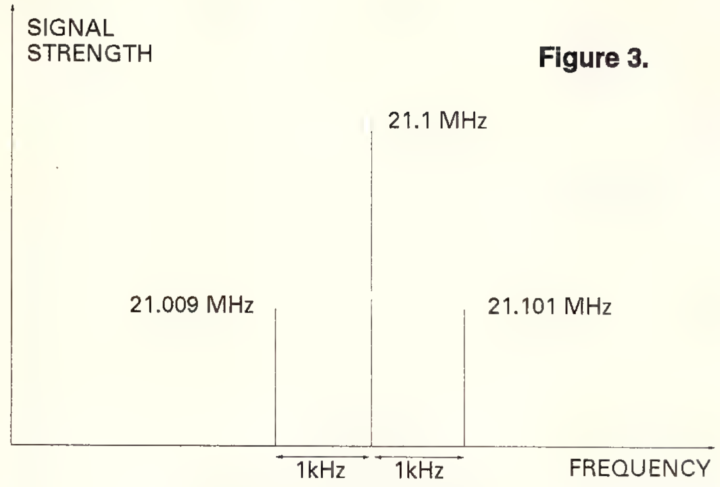


Figure 3.

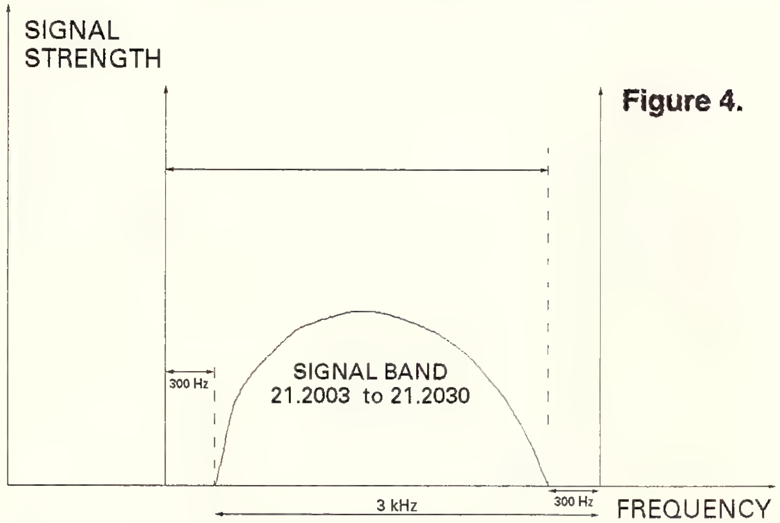


Figure 4.

connected the balanced feeder and to the other the coax to the receiver.

Everything should now be ready, so grit your teeth, genuflect if that will help... and apply power to the radio.

All being well, there should be a noticeable difference in output volume of the background hash with and without the aerial. This is a good sign, as it shows the receiver noise is below the background which forms the limit for the reception.

None of the components should become warm at any time.

Try tuning for a signal. If one can be heard, use it to set the positions of C29 and C44 for the loudest signal. If nothing is available, a rough guide to the settings of these variable capacitors can be made by tuning for the largest difference in noise with and without the aerial connected.

The 15 metre band is subject to strong propagation variations and may be completely silent on occasions — particularly given he current state of the Solar Cycle! However, its

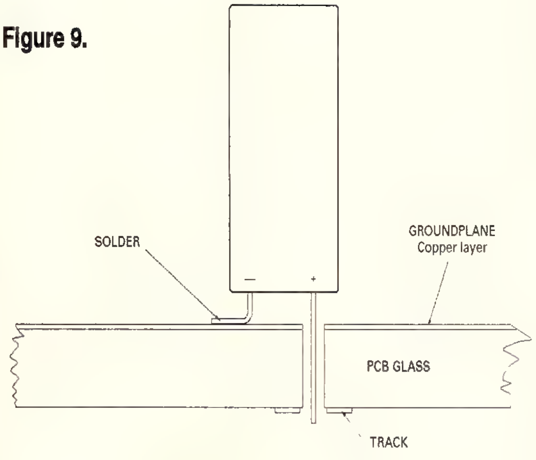


Figure 9.

Listed below, everything most Australians know about MS

MS

For more information about multiple sclerosis contact the MS Society in your state.

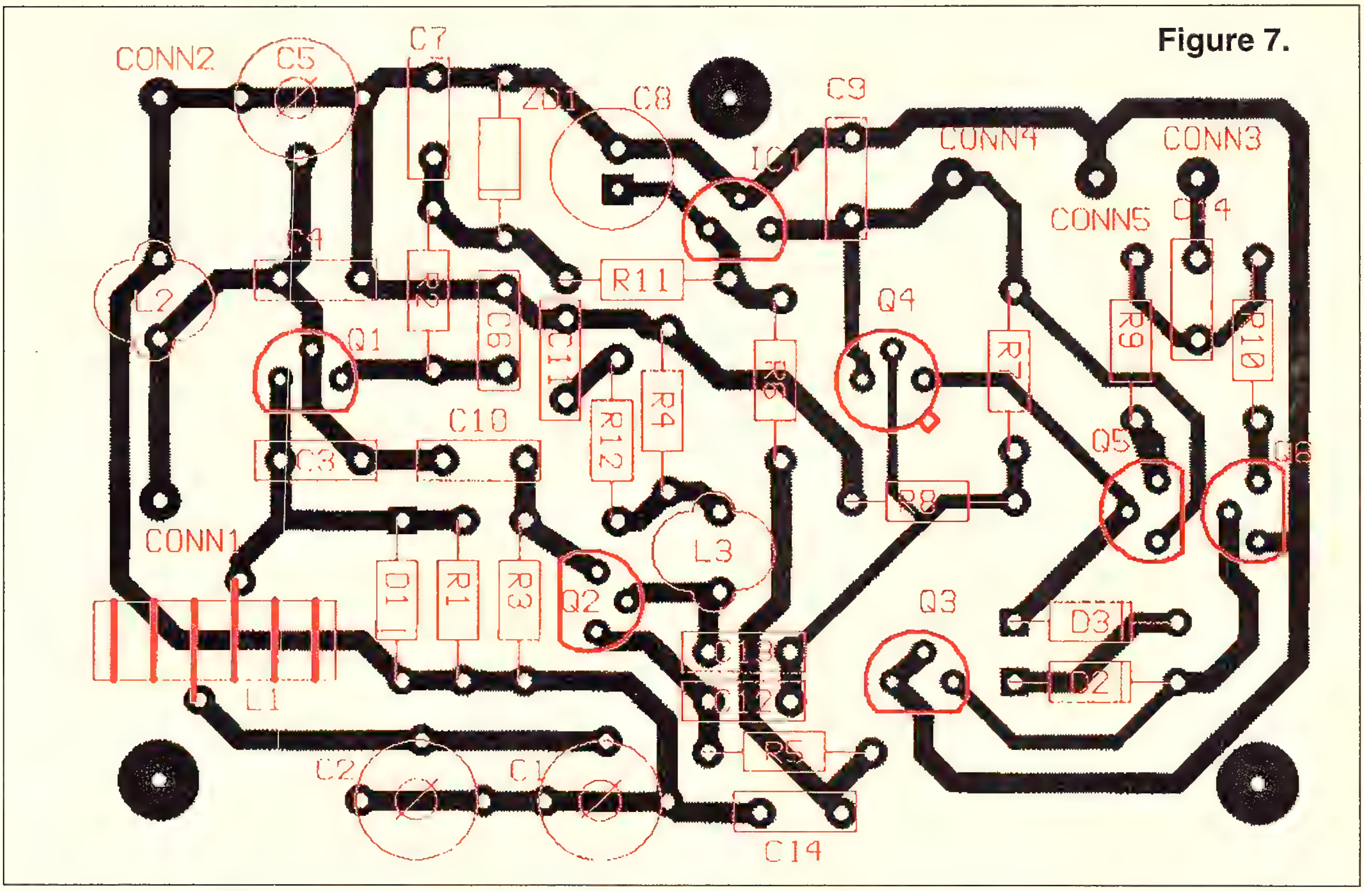
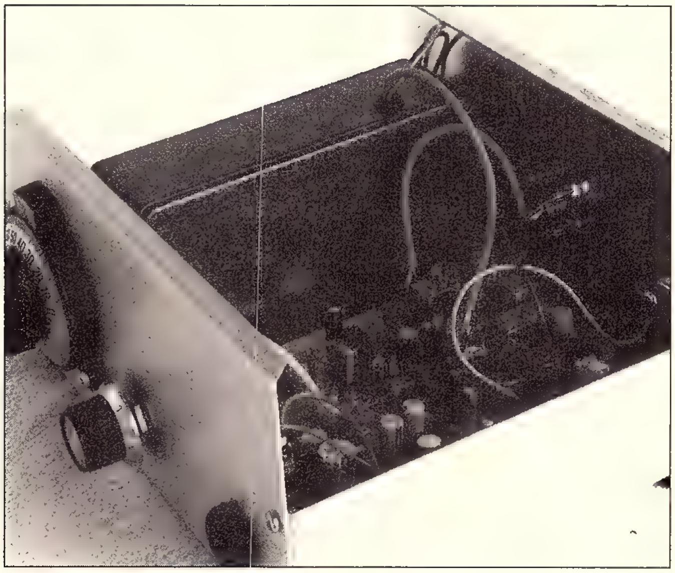


Figure 7.

saving grace is that it is open for long distance communications at some time in just about *any* day.

If the band is open then the signals will be strong... it's *that* simple. For the author in southern England, contact with South America is not at all unusual. I used an American station in New York to tune up the receiver at around 1800z. The construction of amateur radio equipment is truly addictive. If you don't already have one, you'll probably end up with your own call sign — and the next building step will be a low power (QRP) transmitter to match your brand new receiver.

Good luck with your building...



MAIN PCB CONNECTOR TABLE

P1, P4, P6, P12, P15

These connections are terminal pins (I used Maplin FL23A, for which the Australian equivalent is a Stewart Electronics part number HG80.

(Note: Stewart Electronic Components are located at 44 Stafford St, Huntingdale - phone (03) 543 3733/fax (03) 543 7238.)

In all cases, the groundplane *must not* be cut away from the upper surface. During soldering, both the lower pad and the upper groundplane are soldered to the pin. This is to allow both a ground connection to the lower track and a grounded pin for an off-board connection.

P2, P3, P7, P8, P11, P16

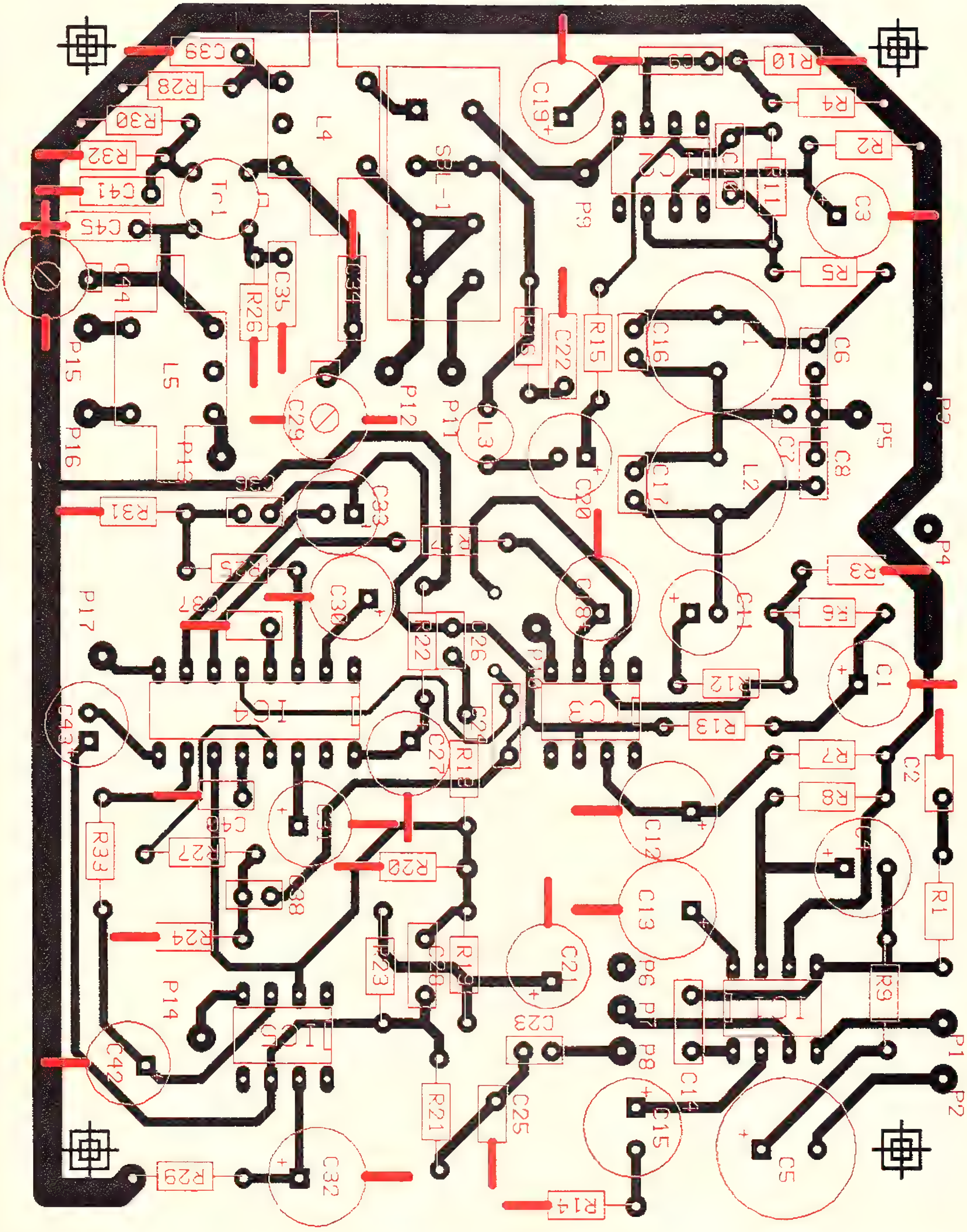
These connections are also terminal pins (again, Stewart Electronics part HG80) which carry live signals to or from the PCB. They are connected to the lower layer only, so the groundplane must be cut back around the pin to give isolation from the ground.

P5, P9, P10, P13, P14, P17

These connections are through-PCB connector pins (Stewart Electronics part HG80). They are used to connect the upper groundplane to the lower layer in situations where it is difficult to arrange for the connection from the component direct. They are pushed well home then soldered onto the lower pad and the upper groundplane.

....☞

Figure 8.



COMPONENT LIST

OSCILLATOR SECTION

Resistors

(All 0.25w metal film)

Shorted out	R12
47R	R9, R10
100R	R2, R3, R6, R11
330R	R4
680R	R5
22k	R7, R8
220k	R1

Capacitors

(All with 15v rating or greater. Lead spacing in brackets is in inches. This spacing is vital if all components are to fit in the allotted space.)

C5, C13	Not used. See text
C10	12pF
C1, C2	22pF variable - Stewart Electronics CH03
C3, C4	100pF (0.2).

(For best stability C3 and C4 must be polystyrene type.)

C6, C7, C9, C11, C12, C14	100nF (0.2)
C8	10µF Elect (0.1)

Semiconductors

Q1	BF245A

(Other BF245 Idss groups may be substituted but with modified gain and stability.)

Q2, Q3	BF245B. Note for Q1 applies
Q4	BSX20 or 2N2222
Q5	BC547 or equivalent
Q6	BC557 or equivalent
D1, D2, D3	1N4148
ZD1	6.2V 400mW zener diode
IC1	78L08 8 volt regulator

Inductors

L1	22 turns of 26SWG enamelled copper - Stewart Electronics FC379 2µH
L2	47µH - Stewart Electronics
CG28	
L3	Shorted out, not used in the 21MHz oscillator

Miscellaneous

Case	See component list of main receiver
Grommet	To suit
Small coax	Small coax: RG174
Tuning capacitor:	See text for value required by the constructor. Check surplus sources for small gang or try Daycom in Melbourne for a new MFJ unit.
PCB	as in Figure 7
Terminal Pins	(5 needed) Stewart Electronics HG80 See text for important
note	on use
PCB Stand-offs	(4 needed) Stewart Electronics HE64
Hookup wire	

THE MAIN RECEIVER

Resistors

(All 0.25w metal film)

R1	1R0
R9	10R
R2, R7, R15, R16, R28, R29	47R
R8	56R
R14	100R
R26	220R
R5, R22	470R
R17, R33	1k0
R12, R21	2k2
R25, R27	3k3
R11	4k7
R4, R6, R10, R13, R19, R23, R32	10k
R3, R20	15k
R18	18k
R30	22k
R24, R31	750k

Capacitors

(All with 15v rating or greater. Lead spacing in brackets is in inches. This spacing is vital if component is to fit in the allotted space.)

C34, C45	Unused. See text
C29, C44	60pF Variable - Stewart Electronics CH05
C14, C24, C28	470pF (0.2)
C10	3n3F (0.2)
C16, C17, C25	4n7F (0.1)
C26	68nF (0.1)
C6, C8, C9, C35, C39, C41	100nF (0.1)
C2, C7, C37	220nF (0.1)
C36, C38, C22	330nF (0.1)
C23, C40	470nF (0.1)
C18, C33, C42, C43	2u2F Elect (0.1)
C1, C3, C11, C19, C20, C21, C32	10uF Elect (0.1)
C30	22uF Elect (0.1)
C27, C31	47uF Elect (0.1)
C4, C12, C13, C15	100uF Elect (0.15)
C5	220uF Elect (0.2)

Inductors

L1, L2	47mH Toko 10RB series. Stewart Electronics CG129
L3	820µH Toko 7BS series. Stewart Electronics CG43
L4, L5	Toko MKANK3428R
SBL-1	Double balanced mixer SBL-1

Semiconductors

Tr1	3N201, 3SK85 or most dual gate
RF FET	
IC1	TBA820M
IC2	NE5534 low noise op-amp. See
text.	
IC3, IC5	741C op-amp
IC4	NE572

Miscellaneous

Through PCB and terminal connector pins (17 needed): Stewart Electronics HG80

(See text for important note on use of these.)

four 8-pin IC sockets

one 14-pin IC socket

10k Log pot volume control and knob

PCB as per Figure 8

PCB Stand-offs (4 needed)	Stewart Electronics HE
Small 50 ohm coax	RG174

BNC Chassis socket and Free plug.

(For lower cost a TV connector may be used.)

Aluminium box	To suit
Main Case	To suit
Slow motion Dial Drive	Try Daycom or other supplier for suitable part

Hookup wire

Stereo headphones as used on a Sony Walkman

Small socket to fit the above headphones

Power connector for the 12v supply..

A RESPONSE TO THE VK3ND ARTICLE ON MORSE CODE

By Bob Vernall, ZL2CA
Wellington, New Zealand

February issue of ARA carried a two-page article by Neil Duncan, VK3ND entitled "CW — a Clear Winner or a Waste of Time?" I wish to respond to several issues raised in that article.

Firstly the title: I believe it is needlessly emotive to imply an 'all or nothing' choice in the matter. CW is neither a 'clear winner' nor a 'waste of time', but some blend that has a different perspective for each individual.

The same could be said for each of many other modes used in amateur radio. Interest groups are actually where specific pursuits are fostered. Most amateurs have multiple interests. Overall, there is a wide range of backgrounds and skills in amateur radio. CW is part of that mixture and therefore part of amateur radio. Where CW differs is that it also has a unique regulatory role as a compulsory part of qualifying for certain certificates and associated amateur licences. The Morse test has a pass/fail outcome on the qualification.

No other single syllabus subject has this pass/fail influence on the overall outcome. So the issue is not the emotive one about who may like operating CW and who may not, but rather an issue of whether it is appropriate to continue with a regulation that makes CW proficiency a compulsory part of a qualification to access amateur spectrum. Operating CW has *always* been a matter of personal preference.

The current CW test in any form provides a hurdle to gaining a licence to work on amateur HF bands. I am in agreement with Neil that some form of qualification is appropriate to access the core HF bands, but I also believe that there should be a realistic choice in the matter. However, having a choice requires prior change to international regulations, so there is little point in debating what may or may not be possible without first addressing the international regulatory issues. More about this later.

Now for a revisit of the "four facts" described by Neil:

VK3ND **fact one**: CW will get through when other modes will not.

I have to agree, as most others would, that for a given path with marginal propagation that, watt for watt, for similarly skilled operators using appropriate bandwidth receivers, that CW will likely perform better than many other modes. Possibly PacTOR is the best weak signal competitor to CW, but this requires the complexity of a TNC and computer.

The practical factor is whether or not the propagation is so marginal as to make for a difficult QSO. HF bands vary between wide open and quite dead.

I venture to say that many amateurs are quite satisfied to log QSOs on a band where propagation is well above marginal, and do something else in the shack when the bands are dead. Even rare DX can come through at good signal strength from time to time. Relative signal strength in a pile-up is perhaps more of a criterion than battling against background noise.

> **"I was recently on holiday in Australia and purchased the February issue of ARA. I read with interest Neil Duncan's article on pages 8 and 9 of the February issue and wish to respond with an article that takes up on several points"**

Inspection of the various DX Honor Rolls shows that there are more participants in the phone lists than the CW lists, which reflects the popularity and proven effectiveness of SSB in a competitive environment.

Given that in Australia and New Zealand the legal power limits are 120 watts for CW and 400 watts for SSB phone, then SSB stations running 400 watts can make up a good part of the natural DX advantage that CW starts with. For shorter distance QSOs, a nominal 100 watts is usually more than sufficient on any mode.

Therefore in practice SSB phone can compete fairly well with CW in most circumstances. Only in very few circumstances is CW the only mode to actually get through. This 'relative performance' factor is hardly one to sway international rule making.

VK3ND **fact two**: Generating a CW signal requires the least degree of technical difficulty.

While this is true in an idealistic sense, the reality is that most amateurs licensed for HF actually use commercial multi-mode multi-band transceivers. This has been so for over 20 years.

Upgrading or shack clearouts mean there are many transceivers sold on the second-hand market, so there are several ways that an amateur can decide on what sort of HF equipment to own and operate.

This does not rule out home construction, but it is my experience that commercial rigs are the first choice equipment for amateurs who are active on HF. The result of having large numbers of multi-band multi-mode transceivers in use is that amateurs merely need to use the mode control to select what mode they wish to try at a given time.

It is of little practical significance whether one or other mode has least degree of technical difficulty when the one rig can generate all. In any case this technology factor is hardly one to sway international rule making.

VK3ND **fact three**: You can cram more CW QSOs into a given amount of spectrum space than QSOs of any other mode.

What is needed for a *genuine* comparison is to consider the information rate of a given mode. The information rate can be used to find how much information can be transmitted and received per kiloHertz of spectrum.

Higher rates can get through a given QSO content in a shorter time. Let's say the CW rate is 15 wpm and the typical spacing between adjacent CW signals is say 1 kHz (mainly limited by transmitted key clicks).

Compare this with an SSB phone signal that has a spoken word rate of 150 wpm and typical spacing between adjacent signals is say 4 kHz (mainly limited by receiver IF filter skirts). In this example the spectrum productivity in terms of words per minute per kiloHertz is in favor of SSB by 2.5 times.

Even use of CW abbreviations would not reverse this finding. Comparing a digital mode like PacTOR with CW, PacTOR can deliver much more than 15 words per minute per kHz, and with error correction at that. Future high speed digital modes will be even more impressive.

A fundamental limitation of CW (using manual telegraphy) is that it is a relatively slow mode and this should be taken into account when comparing efficiencies of the various modes.

....☞

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A RESPONSE TO THE VK3ND ARTICLE ON MORSE CODE

(continued from previous page...)

Whatever, the claim about CW bandwidth is hardly a factor to sway international rule making.

VK3ND **fact four**: A set of international conventions have been set up to allow communication on CW to take place even when a total language barrier is in place.

Using only Q codes and standardised abbreviations is very restrictive. Use of a language (ie words and their meanings) is needed to communicate at other than a simplistic level. In any case, amateur radio DX operators have a preference for using English language, on CW or phone.

Amateurs are free to choose what mode, band and time to use amateur radio, and they can also make a choice about language. The existence of standard abbreviations and Q codes does not make these the only way to be able to communicate by amateur radio, and is hardly a factor to sway international rule making.

Comment

None of the VK3ND claimed 'facts' are compelling reasons to have an international radio regulation that requires every candidate in the world to demonstrate proficiency in Morse Code before qualifying for a licence to use amateur HF bands.

How about some documented results to substantiate claims?

1. Is CW a 'principal mode'?

Neil claims that his monitoring indicates that there are more CW QSOs going on than for the total of all other modes. This is not the impression I have gained from tuning around, but rather than going on undocumented opinions, let us see tabulated results of monitoring.

Also, others should independently survey amateur bands and document results. Then there will be some evidence on which to make informed decisions.

A caution on comparing apples with apples, as taking account of VK3ND fact one, it follows that CW QSOs will likely be able to be monitored at a greater distance than for other modes, which could lead to a bias in observing if CW appears to be a 'principal mode'!

In any case, if some other mode is found to be a new principal mode, this in itself is no justification for this new mode to then become a compulsory component of gaining a qualification.

Take the example of amateur VHF bands, where FM phone is likely the most-used mode, but it does not need to be a compulsory part of the qualifying examination.

But returning to the original point of this paragraph, presenting documented results of modes used is the way of proving the point, either way. This information would also useful for band planning purposes, to see which specific sub-bands are becoming more crowded or underutilised. Sub-band dividing lines should be reviewed and shifted to match current amateur usage (for example, packet radio use around 14.1 MHz).

2. CW and emergency communications?

The emergency communication issue could also be clarified by documenting actual cases of what modes were used in actual emergency communications situations.

In New Zealand, SSB phone is by far the most used mode for emergency communications using amateur HF bands. Other organisations such as Search And Rescue and Civil Defence have amateurs volunteering as communications operators.

These organisations all use voice modes and their HF equipment usually does not even have a jack for a Morse key. In practice, SSB phone serves the purpose, as selected bands are usually far from having dead propagation.

Note that in recent times public use of cellular telephones in emergency situations is probably serving the community many more times over than does amateur radio, and this will only increase over time. Therefore, claiming an essential purpose for CW in public service radio and amateur radio is hardly a credible claim these days.

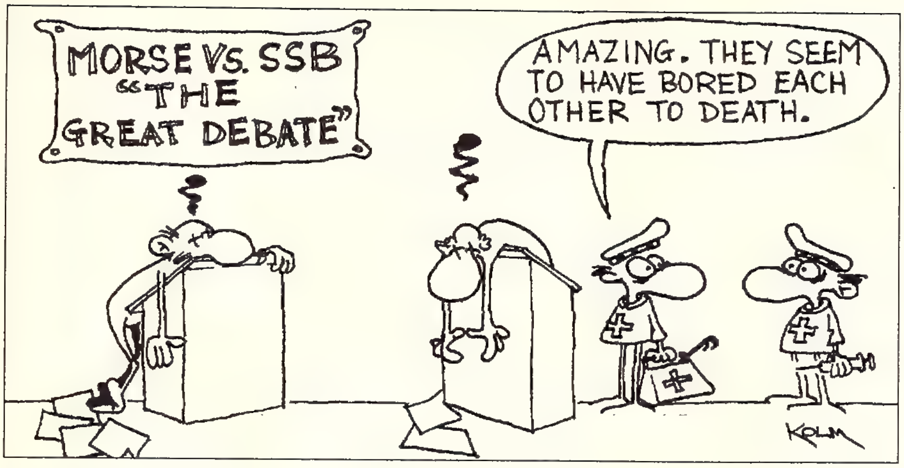
So where does CW fit into the scheme of things that it is an essential saver of life or property? I suggest that using SSB phone, with English language, has the best chance of receiving effective assistance by radio, nationally and internationally.

The 'hidden agenda' to limit the number of participants

I suggest that the current international regulation is really an administratively-convenient way of limiting the number of participants on the amateur HF bands.

The illogical formulation that associates the access of spectrum with personal Morse Code proficiency is largely held in place by a 'nod, nod, wink, wink' attitude by the majority of amateurs who happen to have passed a Morse test. I believe that this self-serving attitude of trying to indoctrinate newcomers with Morse practice, without good reason, is one of the threats to the future survival of amateur radio.

There are many young people who are


MORSE VS. SSB "THE GREAT DEBATE"
AMAZING. THEY SEEM TO HAVE BORED EACH OTHER TO DEATH.
KOLM

computer-literate and who could become interested in amateur radio, but who have little or no attraction to serving out a telegraphy apprenticeship in order to qualify for a full licence.

I believe the time has come to change the regulations and thereby allow full qualifications to be obtained by other suitable tests or examinations (such as keyboard skills or digital radio techniques).

Regulatory change does *not* mean 'doing away with CW'. Morse testing should continue to be offered as one of the syllabus options for qualifying. CW operators are free to carry on with what they like doing. Newcomers are free to learn and use CW if they choose.

All along, the 'facts' about CW will continue to exist, along with many interest group supporters, even if the regulations on qualifications change.

CW can float to its own level of interest group support, just as for all other parts of amateur radio. Also as mentioned earlier, there are mixtures of interests as well.

So while I have no problem with anyone (including myself or Neil) operating on CW whenever they choose, I *do* have a problem with an international regulation which serves to maintain a single mode blanket barrier to progress in amateur radio qualifications.

NEIL DUNCAN'S RESPONSE...

Ah, it is good to see discussion on the use of CW in amateur radio! The more debate on CW, the better. You see, I reckon some people will focus on this grand mode even more if facts about it are advertised and discussed. Inevitably we will find even more takers for its use. Now, the editor has just pointed out to me that Bob Vernall, ZL2CA has taken the initiative and responded to my earlier jottings on the matter of CW.

Bob's conclusion? Is it that he has a problem with CW being part of "...an international regulation which serves to maintain a single mode blanket barrier to progress in amateur radio qualifications..."?

Golly Bob, what does that mean? Do you somehow feel that Morse Code is spoiling things for the hobby? Is it that the Morse exam is more difficult than, say, the theory part of the amateur radio? Is it that selecting CW-proficient people for HF band use is counter-productive to progress? I most earnestly hope that my love of CW is not helping to diminish progress in the hobby! Heaven forbid! Not to worry — my further use of the mode has been granted in Bob's last paragraph. Phew.

A few of your conclusions bother me a little, Bob. Cellular phones replacing amateur radio in an emergency? What happens if the network is out — do we use string and tin cans? Next, you note that NZ emergency transceivers don't tend to have CW sockets on them. Hmmm, that give the international regulation lawyers something to be jacked off about. Oops, sorry. I have always felt that ZL technology leads the way... but really, your missing socket problem hardly diminishes the worth of CW.

Beyond that, though, your concept of 'effective assistance' in an international level emergency is worth scrutinising since it is an international regulation you are focussing on. Would you really have us use SSB only in an international emergency Bob? It is my opinion (yet another unsubstantiated one) that the number of non-English speakers in the world exceeds the number of English speakers. Kind of makes some English SSB procedures a little tight, I would have thought.

You make yourself very clear on this point: "I suggest that using SSB phone, with English language, has the best chance of receiving effective assistance by radio, nationally and internationally". Maybe your plan is this — simply don't rescue them if they can't use English.

....☞

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J OB.01

A RESPONSE TO THE VK3ND ARTICLE ON MORSE CODE

(continued from previous page...)

Maybe, just maybe, the international nature of good old CW might be able to assist somewhere in some special circumstances, mightn't it? That is, alongside SSB...

Oh, and on the matter of unsubstantiated facts, try tuning between 7.000 and 7.010 MHz between dusk and midnight. When writing the story I counted the number of CW QSOs and then counted the number of non-CW QSOs — voice, packet... the lot — between 7.040 and 7.300 MHz. I made the ratio 20:3 on average in ten three-minute intervals spread over five consecutive nights.

But let's add to that. Why is CW used in moonbounce? Why is narrowband CW so popular in weak signal DXing (ie in conjunction with QRP or with humble antennas?) Why is CW so popular in the gaining of a five-band DXCC?

How is it *possible* that CW DX QSOs can take about the same time as SSB DX QSOs if CW is so time-inefficient as I sense you imply? I timed an example for you. Last Sunday, a North African DXpedition on 14.015 MHz was averaging one QSO per 30 seconds on CW. That's not bad for a clunker of a mode...

You note that "...in practice, SSB phone can compete fairly well with CW in most circumstances...". Did I sense an argument for this along the lines of "...we can use 120 watts on CW but 400 on SSB...", therefore where is the edge?' Maybe I'm thick, but isn't that 400 watts of PEP Bob? Anyway, I like your phrase "...the natural DX advantage that CW starts with..." in that context, too. In one key phrase, you have summed up why I feel that CW is such a joy and why it is such an essential mode.

Is SSB ever better than CW? Sure — when the band is open and when bone-crushing DXCC hunter are on the prowl with their multi-kilowatts and massive antennas, nothing comes near SSB. CW hasn't got any kind of show against this kind of turkey shoot.

No wonder SSB operators dominate the DXCC lists!

Let's do some lateral thinking — study some of the CW signals humming away down the low end of each band. A flip through my log reveals an uncanny number of 100 watt rigs and dipoles or simple verticals. I betcha some of their users are on their way to DXCC too.

Bob, to me, amateur radio doesn't consist of just Yaesu, Kenwood or Icom rigs connected via linears to whacking great radiating monsters. It may be your experience "...that commercial rigs are the first choice equipment for amateurs who are active on HF..." but down on my beloved CW end of 20 and 40 metres, I do not find this to be completely true.

A staggering number of stations use amazingly modest gear in addition to those using multi-mode rigs. Entries in my logbook record home-brew and vintage rigs as well — especially from those signals emanating from the Eastern bloc, from Asia and from elsewhere.

Despite the plethora of commercial rigs, I still maintain that CW is easier to generate. That special concept is not diminished by the presence of commercial multi-mode gear in affluent shacks.

Finally, I find entertaining your need "...for a genuine comparison is to consider the information rate of a given mode..." in your discussion.

The poor old blighter writing this (me) would have enormous trouble hand-sending 150 or more WPM to keep up with the data rate necessary to use bandwidths even marginally approaching SSB bandwidths. No, no that is not the real world. 'Struth, if CW had to be sent *that* fast to get the information across, the low end of the band would be empty! Real CW operators compress their data!

You see, it is not the data rate of CW that I wish to think about here. It is the ability of CW to gain a cutting edge, to cope with marginal conditions when marginal equipment, antennas and propagation are in force.

Add to that its ability to efficiently overcome gross international language barriers, and you'll see why CW fascinates me.

Right now, I just switched on 40 metres (about 11 at night), and counted 11 QSOs between 7.000 and 7.015 (from three continents on an otherwise dead band).

Really and truly, do you think you would have such enthusiastic band usage if you planted side-by-side SSB signals in that space — ones strong enough to be intelligible?

Finally, Bob, you are mistaken if you think I wrote the original article to convince people out there that international regulations should continue to include compulsory CW in the places where it currently does.

My sole intention in writing was to present some facts about the mode in order to attract more users of CW.

I have read your letter and have re-read my article.

I stand by every single point.

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J WC.01

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The AUSTRALIAN RADIO DX CLUB (INCORPORATED), is a non-profit organization dedicated to the promotion and advancement of long-distance (DX) radio reception, monitoring, and QSL reporting as a hobby. We cover shortwave, medium wave, longwave, utility, and FM broadcasting. 1995 is our 30th anniversary year, with hobbyists from all walks of life and age groups represented in our membership.

For full details of membership, and a FREE copy of the Club's magazine, "The Australian DX News", please write now to:

AUSTRALIAN RADIO DX CLUB INC.
Attention: Membership Business Manager
PO Box 818
SWAN HILL VICTORIA 3585

J AR.01

AN ANTENNA WITH A DIFFERENCE

...a fairly BIG difference in fact

Ray Naughton of ATN Antennas was fairly enthusiastic when he 'phoned us just before deadline to tell us that he had managed to obtain the agency for the "High Sierra" HS-101 antenna - a mobile with something of a difference.

This unit is an all-band, centre-loaded quarter wave, vertical radiator HF antenna with a continuously variable, remotely controlled loading call.

All of which means that you can hop around from band to band without carrying a bootful of whips.

The unit can be tuned to resonance at any frequency in the HF spectrum by varying the inductance of the loading coil. With a 67 inch whip, the antenna will tune to 3700 kHz while a 79 inch whip provides coverage to 3450 kHz. If you really want to get serious an auxiliary coil can be added atop the standard coil to allow 160 metre operation, however, this precludes operation on the high frequencies.

All of the above means that you can operate from 10m to 80m without leaving your vehicle

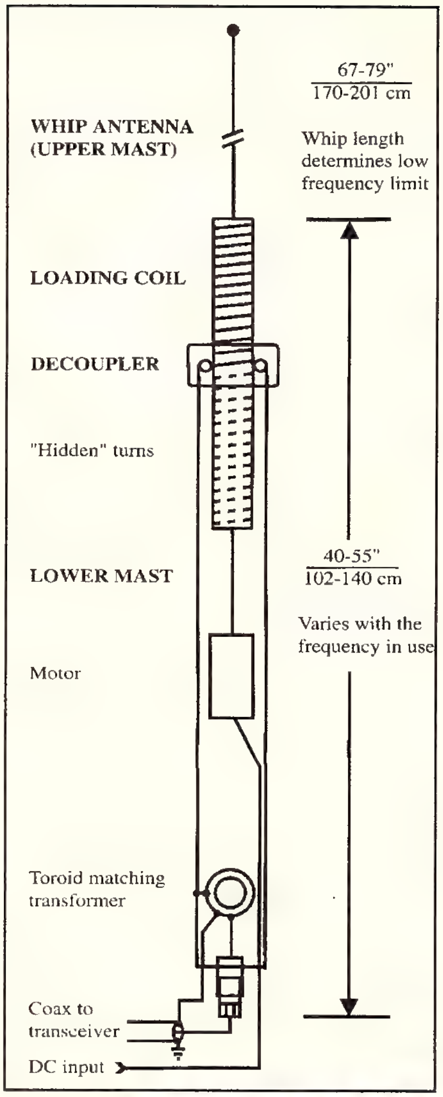
The manufacturer's state that "although the HS-101 provides broad frequency coverage, it is not a 'broadband' device. The high-Q centre loading coil makes the antenna sharply rtesonant".

A small DX motor and planetary gear-drive move the loading coil up and down inside the lower mast section via a long threaded shaft. The frequency of the operation is controlled by a DPDT switch which reverses polarity to a motor and thus controls its direction of rotation. The manufacturers make a strong point of the fact that antenna tuning units are not required - with the special note "TS-50 owners take notice".

Since the antenna is continuously variable over its range, it can be used for non-amateur applications for both reception and transmission and it is claimed that the unit makes a "wonderful shortwave receiving antenna" since it can always be tuned to resonance. No claims are made for the beauty of the antenna, however, as beauty is usually in the eye of the beholder most amateurs will nonetheless find it quite attractive.

The unit certainly has a wide variety of applications with amateurs, four wheel drive vehicle owners, shortwave listeners being but a few who should find it a well worthwhile investment.

We are unable to quote a firm price as ATN had only just secured the agency, however, at the "rough" price manager Ray Naughton was talking it sounds like very good buying. ATN's address/phone number is advertised elsewhere in this issue.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About Six...By Steve Gregory, VK3OT...

VK8 Beacon heard in DU7

Last night, 26 February, the VK8VF Beacon in Darwin was coming in quite loudly on six meters here in Dumaguete, Negros Island, in the central Philippines (PJ29ph). I listened and called CQ on CW from about 1230 to about 1400 UTC, but no signals were heard. The band was relatively quiet — little of the garbage that usually accompanies an opening.

Come on, VKs, turn on your radios! See you soon on six. 73 from Dale, N7ET/DU7 [N7ET @ DX7NRD.EVIS.PHL.OC]

6M DX operations

There's plenty of activity around if you look for it. Try some of these:

C6AGN from April to May 15 by **KM1E**. QSL KM1E

D4/G from May 30 to Jun15, by the **UK6MG**.

HB0/HB9QQ, from Aug 09 to 13, by **HB9QQ** (JN47tc). QSL via HB9QQ.

JX7DFA, from July 1, to April 96, by **LA7DFA** (IQ50ov). QSL to JX7DFA.

OX3LX, from April 18 to Sept 10, by **OX3LX**. QSL to OZ1DJJ, GP35, 36, 37, 38.

VK0IX, until December 1995, by **VK5IX** (OC53qj). QSL to VK5PO.

3A2LZ Summer 95, by **3A2LZ** JN33RR.

3V8BB Summer 95 by JAs.

9M0AG was supposed to be activated on 50 MHz again by the JA9 M6 team during April. QSL via JA9AG.

Peter **PY5CC** was active as **PY0FM** on 6M EME during March.

HB0/HB9QQ will be active again from Aug 9 to 13. QRV on 6 from JN47tc. Pierre will mainly active in MS/Es from this rare spot.

Monaco, 3A

At the annual general meeting of the **Amateur Radio Association of Monaco**, the government official for amateur radio affairs reported on 50 MHz. There are no problems in having official recognition for six from Monaco soon. The exact frequency allocation and power have still to be confirmed, but it is hoped to obtain an allocation in the range 50.150 to 51.200 MHz with 25w. After a number of years of negotiations the PTT has given permission for residents to apply for 'temporary and revocable' permits. To date two applications have been made and a number have expressed an interest.

As anyone who has visited Monaco will be aware, any form of amateur radio activity (never mind VHF) is a challenge due to the terrain of the small principality. The six metre station of Daniel, 3A2LZ has been sponsored by a number of supporters of the UK6MG, including a 25w 10/6 transverter and a Cushcraft beam. The UK6MG will supply QSL cards.

Please note that six metre operating privileges will only initially be given to residents who apply for special permits. Please remember that 50 MHz in Region 1 is not a general allocation, and thus does not come under the CEPT operating privileges. Foreigners will not be given operating privileges ahead of residents. Daniel, 3A2LZ asks for patience, as over-eager, excitable and even well-meaning amateurs have caused problems in the past.

If you would like to support the work of the UK6MG and become a member please write to the Secretary, Chris Gare, G3WOS, Old White Lodge, 183 Sycamore Road, Farnborough, Hants, GU14 6RF, UK. 73 Neil Carr, G0JHC.

This report from the UK 6M Group.

OX3LX SIX METRES FROM GREENLAND 95

During my work for Greenland Telecom I expect to be QRV again from OX on HF and six metres.

DATE	*W.W.loc.*	*CITY*
18/4 - 22/5	*GP35,GP36*	*Sisimiut/Sukkertoppen*
2/6 - 7/7	*GP36,GP38*	*Sisimiut/Egedesminde*
14/8 - 10/9	*GP36,GP37,GP38*	*Sisimiut-Egedesminde*
12/9 - 22/9	*GP44*	*Nuuk/Godthaab*
20/11 - 2/12	*GP44*	*Nuuk/Godthaab*
20/12 - 3/1-96	*GP60*	*Julianehaab*

Working frequency, in major openings will be 50.135 MHz, but if no station is heard I will be calling CQ on 50.110 MHz. My rig is an FT-690 with a 100 watt PA, and the antenna is a 5-element Yagi. I look forward to hear your Call in my log.

Best 73 and have a nice Es season.

Bo OX3LX/OZ1DJJ

This report direct from The OZ Database (OZ7SIX @ OZ5BBS.FYN.DNK.EU)

EME

Hi, I'm Mike, **IK8MKK** and I'm looking for 50MHz skeds on EME.

My QTH is Caserta, south Italy, at JN71DC locator, and I have a good take-off to all directions. My rig is a TS-680S into an 11-el M^2 Antenna (13 dB gain). The power is the legal max power.

For Skeds please write to me, IK8MKK @ I8WTW-8

73 best regards and see you on the magic band.

de Mike IK8MKK. Visca Michele, V.le della Liberta' Coop. I Professori, 81022 Casagiove (CE) Italy. My telephone is 0823 492106

News from South Africa

I have received copies of messages from **ZS6WB**, re ZS heard in VK etc. ZS2FM wants exact times when ZS6 were heard, from VK3 and also from VK7ZMF.

Lionel writes... "I am well equipped for 50 MHz with 150 watts all-mode and a 6-element wide-spaced Yagi and GaAsFET preamp. I am currently monitoring Ch 2 Perth TV video on 64.25 MHz with a specially-constructed 6-element Yagi and crystal-controlled converter for this channel. When this TV signal is picked up here in Port Elizabeth I will alert VK stations via the telephone.

We have a six metre beacon here in Port Elizabeth (ZS2SIX) on 50.005 MHz, with 25 watts into a dipole beaming to VK.

I am prepared to run a keyer on 50.160 MHz on Saturday and Sunday mornings from 0400 UTC. Are you interested for skeds?

Mike Bosch, ZS2FM,
VHF/Microwave Manager,
PO Box 1614,
Port Elizabeth 6000.
Telephone: 0011 27 041 51 2425
Fax: 0011 27 041 337701

My packet address is: Lionel, ZS2DD @ ZS0UTE.ECP.ZAF.AF

Satellite Status

AO-10 Operational, however signals through the transponder are very weak once satellite goes beyond 20,000 km.

UO-11 Broadcasting telemetry, and AMSAT-UK Bulletin.

AO-13 Mode-B signals are okay. Mode-S is weak at start due to large PAs. Mode-S CQs heard from LX2LA & IW0RHR.

AO-16 File server and digipeater in operation. Use PB/PG (DOS), WiSP (MS-Windows), or MGSS (Linux X-Win).

DO-17 Broadcasting packet telemetry. The voice experiment is off. S-Band beacon is on with a strong PSK signal.

WO-18 New photos, and whole orbit data weekly. Broadcasts new light spectrum of the Earth or Sun every Monday.

LO-19 File server and digipeater in operation. Use PB/PG (DOS), WiSP (MS-Windows), or MGSS (Linux X-Win).

FO-20 Spacecraft is in Mode JA and broadcasting (435.975MHz) CW telemetry. Several OM heard making QSOs 29-Jan-95.

UO-22 File server in operation, with new files daily. Use PB/PG (DOS), WiSP (MS-Windows), or MGSS (Linux X-Win).

KO-23 File server in operation, with new files daily. Use PB/PG (DOS), WiSP (MS-Windows), or MGSS (Linux X-Win).

KO-25 File server in operation, with new files daily. Use PB/PG (DOS), WiSP (MS-Windows), or MGSS (Linux X-Win).

IO-26 Satellite is broadcasting telemetry. Digipeater is available.

AO-27 The satellite is in FM transponder mode during weekend daytime passes only. Activity heard Feb 25.

RS-10 Reported operational.

RS-12 Reported operational.

RS-15 Reported operational, except for eclipse times when transponder is apparently turned off.

MIR has been active recently on voice and packet.

WEBERSAT (**WO-18**) is broadcasting new images and light spectrometer data weekly. Software for the extraction, decoding, and display of spectrometer data, written by Bob, KB7KCL, is available by request on AO-16/KO-23, or directly from Weber State University. Monday utc, continues to be the day for the broadcast of the most recent spectrum, along with the week's WOD.

WeberWare 1.0, 1.2, 1.3, or a similar program is required for picture extraction, decoding, and display. WeberWare 1.3 is the current software version, and is available from Weber State University, AMSAT-NA, or AMSAT-UK.

The satellite now has a weak and relatively steady tone of about 1200 Hz in the downlink signal, which can cause reception problems with some modems. If this problem occurs, a ground-based solution is to adjust the IF-shift of the receiver to suppress the carrier into the skirts of the IF filter.

WO-18 is currently sending spacecraft temperatures, and impact detector whole orbit data (WOD). This is an excellent opportunity for a student, group, or class to use this data for micrometeorite studies, or the study of spacecraft thermodynamics.

Check your local BBS, Space News, or ANS bulletin for the current status of your favorite satellite.

Weather Satellites

Hello to all weather satellite fans, today March 2, I received the new Russian geostationary weather satellite **ELEKTRO-1** for the first time in the 1.69GHz frequency band.

ELEKTRO-1 is currently positioned at 76 degrees east and, from my location (JN65TW), this gives 10 degrees elevation and 110 degrees azimuth. Anyway, the satellite is visible from most of Europe except Spain and United Kingdom.

The first transmission detected from ELEKTRO-1 was an unmodulated carrier at 1691MHz at around 9.30UTC. The carrier was interrupted several times. A check on a spectrum analyzer showed yet another transmission centered at around 1685MHz with widely spaced sidebands. The transmission at 1685MHz was turned on and off independently of what was happening with the 1691MHz carrier.

At 10.55UTC a WEFAX picture was transmitted on 1691MHz, unfortunately without start tone, sync pulses and stop tone. Yet another WEFAX picture was transmitted at around 11.20UTC. The images transmitted seemed old METEOSAT images. Probably the ELEKTRO-1 image sensor is not operational yet? All transmissions ceased in the afternoon, since probably the experiments with ELEKTRO-1 are carried out only during normal working hours in Russia.

The above experiments were made with a 90cm dish equipped with a circularly-polarised feed (RHCP) for 1.7GHz and a GaAsFET preamp that is normally used for NOAA HRPT reception.

The signal strength at 1691.00MHz is comparable to that coming down from METEOSAT-5. There is also some quick repetitive fading, suggesting that the same transponder is also being used for some other purpose.

The FM deviation and 2400Hz subcarrier are identical to the METEOSAT WEFAX broadcasts, but there are some spurious signals as well, like a 600Hz spurious subcarrier.

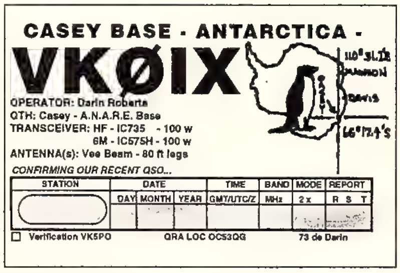
The signal centered at 1685MHz is maybe even stronger, although the spectral component at 1685MHz is rather weak. But there are very strong symmetrical sidebands at 1683.73MHz and 1686.29MHz, and slightly less strong but even further spaced sidebands at 1681.17MHz and 1688.85MHz. The sidebands sound repetitive suggesting a high-speed digital image transmission.

Let's hope that a regular service will be started soon and that ELEKTRO-1 will provide many interesting images from its location above the Indian Ocean.

73s de Matjaz S53MV @ S50BOX

VK0IX cards received

Thanks to **VK5PO** and Darin **VK5IX** for a speedy response on the VK0IX Casey six metre QSL cards received today, March 16, just two months after making the QSO.



CASEY BASE - ANTARCTICA -

VK0IX

OPERATOR: Darin Roberts
QTH: Casey - A.N.A.R.E. Base
TRANSCEIVER: HF - IC735 - 100 w
6M - IC575H - 100 w
ANTENNA(s): Vee Beam - 80 ft legs

CONFIRMING OUR RECENT QSO...

STATION	DATE			TIME	BAND	MODE	REPORT
	DAY	MONTH	YEAR	GMT/UTC/Z	MHz	2 x	R S T

☐ Verification VK5PO　QRA LOC OC53QG　73 de Darin

I now have confirmed all seven continents two-way SSB and two-way CW with different contacts and stations worked, all on 50 MHz. band.

Grid Fields

Grid Fields are more proprotionately distributed around the planet, so why not count Grid Fields as a sign of operating achievement and accomplishment?

SM5IMC has compiled the following top ten: 88 **NI6E/KH6**, 74 **W5OZI**, 73 **GJ4ICD**, 71 **SV1DH**, 69 **N0LL**, 68 **WA6BYA** and, on 67, three stations: **K0US**, **SM7FJE** and your scribe, **VK3OT**.

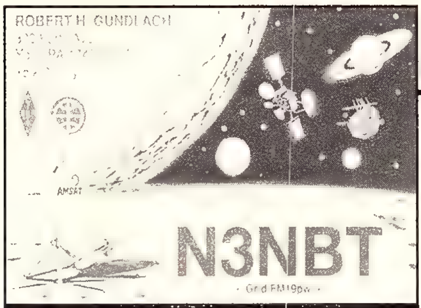
Your count can be sent via packet to SM5IMC @ SK5BB.#AROS.U.SWE.EU or write to Slansbarsvagen 270, S-74560 Ekoping, Sweden.

VK4 to JA Path

Yutaka **JH1WHS** furnished this condensed report of some JA to VK4 openings in February. **JH9BHZ** also confirmed some contacts:

Feb 11: VK4AFL.
Feb 13: VK4AFL, VK4PU, VK4ZAA, VK4VV, VK4DO, VK2YDC, VK4NW.
Feb 19: VK4DO, VK4CAB.
Feb 21: VK4AFL, VK4PU, VK4TVI, VK4ZX, VK4APG, VK4DO.
Feb 28: VK4AFL Beacon by JA3TJG?
Mar 01: VK4AFL and VK4WTN.

*Thanks to **SM7AED** and **DL8SET** for a major contributions of news to the bulletin, also **G0JHC**, **IW0BET**, **PB0ALN**, **OX3LX/OZ1DJJ**, **LA7DFA**, **IK0OKY**, also the UK Six Metre Group newsletter, IPS Sydney, and the Melbourne Packet Group for information.*



DX & BAND REPORT

Further to my comments on Bhutan in the last issue of ARA, it is reported that the JA group made some 8,200 QSOs over the four-day period. The word is that the operation will be okay for DXCC credit, and so also will the short initial demonstration by JA1BK and myself a few weeks previously signing A51MOC.

In my view things are now on the move. If the government moves quickly to pass the legislation permitting amateur radio, then the Kingdom of Bhutan will Finally have joined the amateur radio service. It's been a long haul, that's for sure...

Antarctica

A decision has been reached by the UK to close down its Faraday Base monitoring station on Graham Land. The station has for many years carried out research into ionosphere and geomagnetic conditions. It is said that the Ukrainian Antarctic Research Centre (UARC) is negotiating with the UK to take over the station.

Meanwhile, Eddie, **VI0ANT**, will soon be back in Australia after his stint in Antarctica. He has been very active during his stay. Propagation conditions have, of course, been a major problem.

What's in a callsign??

Here is another update on various 'new' prefixes since the major upheavals of a couple of years ago. These are official ITU allocations, apparently with a 'provisional' tag attached. My guess is that this was only a background comment to cover any hiccups in the allocations. Certainly by now we have all worked an S5, OM3, Z3, 9A and so on, since the prefixes are in everyday use on the bands.

4JA-4KZ	Azerbaijani Republic	was RD, UD
4LA-4LZ	Republic of Georgia	was RF, UF
9AA-9AZ	Republic of Croatia and Herzegovina	was YU was YU
E2A-E2Z	Thailand	also HS
EKA-EKZ	Republic of Armenia	was RG, UG
EMA-EOZ	Ukraine	was RB, UB, UY etc
ERA-ERZ	Republic of Moldova	was RO, UO
ESA-ESZ	Republic of Estonia	was UR
EUA-EWZ	Republic of Belarus	was RC, UC
EXA-EXZ	Republic of Kyrgyz	was RM, UM
EYA-EYZ	Republic of Tadjikistan	was RJ, UJ
EZA-EZZ	Republic of Turkmenistan	was RH, UH
LYA-LYZ	Republic of Lithuania	was UP
OKA-OLZ	Czech Republic	was OK
OMA-OMZ	Slovak Republic	was OK
RAA-RZZ	Russian Federation	see was RA, UA
S5A-S5Z	Republic of Slovenia	was YU
T9A-T9Z	Republic of Bosnia	
UAA-UIZ	Russian Federation	new identity
UJA-UMZ	Republic of Uzbekistan	was RI, UI
UNA-UZZ	Republic of Kazakhstan	was RL, UL
URA-UZZ	Ukraine	see EMA-EOZ
YLA-YLZ	Republic of Latvia	was UQ
Z3A-Z3Z	Republic of Macedonia	was YU

Kermadec, ZL

In a previous column I used the name 'Department of Conversation' as the authority for permits to visit islands in the Kermadec Group. A ZL station has written to me pointing out my typing error — it should of course read the Department of Conservation!!

My apologies for the typo... and even my super word processor 'Spell Checker' did not pick up the typo since 'conservation' and 'conversation' are of course valid words.

Oops!

(The sub-editor should have spotted it too. Sorry. Ed.)

Vanity call signs USA

In a recent decision, the FCC has now agreed to the issue of 'vanity' callsigns. The idea is not new and it will be interesting to hear these new calls from the USA. Those of you who have been around for a while will remember the total confusion when the first 'two by one' call blocks were made available.

Amateurs you had known and worked for years overnight became someone else. W4QCW became WD4R and so on, as the guys and gals grabbed for these early allocations. The 'two by one' structure, of course, is an allocation to Extra Class license holders only. I hold **WR1Z** as a stateside callsign/extra class license.

The whole US callsign structure is, of course, computer-based. It's first in, first out, in a strictly automated process. This is about to change, with a series of four 'starting gates' about to apply. These are:

Gate 1. Previous holders of a call sign may apply to get it back. If the owner is a SK then a near relative could apply.

Gate 2. This will allow Extra Class license holders to apply.

Gate 3. This will allow Advanced Class license holders to apply.

Gate 4. This will allow any licensee, including club station (trustee) to apply.

The first gate will be open as soon as the new FCC Form 610-V is available from FCC.

FCC says its step-by-step system will allow procedures, validations etc to be fine-tuned before entering the next phase. FCC has contracted the system out to Mellon Bank in Pittsburg. All applications will be processed strictly on a first in, first out basis. The FCC has delayed a decision on, would you believe, the ONE by ONE Block pending further discussion. There are several other points in the FCC release, but it is interesting to note that a charge of $70 for a ten-year licence will be levied for these new 'vanity' callsigns, and the same again for renewal.

At US$7 (around A$10) per year for one's own preference of callsign (for whatever reason) is a bargain. The ARRL is working with the FCC to trying to limit this to a one-time payment only.

If you desire a copy of the FCC Report and Order please write to ARRL HQ with an SAE and return postage. (I expect that a green stamp or one IRC would be enough.)

Cambodia, XU

Sanyi, **HA7VK** has been signing **XU7VK** from Phnom Penh recently, and he has now received additional permission to use the special event callsign **XU95HA** during 1995. The call will be used on several occasions, especially Hungarian or Cambodian celebrations.

QSL Route: HA0HW

Laos, XW

There are two stations currently active from Laos. **XW2A** and **XW1BOD** have both been reported on 40 and 20M CW.

QSL Routes:
XW1BOD: JA2BOD
XW2A: JA2EZD

Ascension Island, ZD8

Don't know about you but those ZD7s, ZD8s and ZD9s are rare birds indeed. Good news is that Ken, **G4RWD** will be active for the next six months from Ascension signing **ZD8WD**.

QSL Route: G4RWD

Jim, **N6TJ** signed **ZD8Z** until the end of March. If you worked him...

QSL Route: VE3HO

South Georgia, VP8

Pat, **VP8CID** and Sarah, **VP8CGE** reported earlier live on South Georgia. Pat is the Master and Head of Fisheries (for the Falkland Island Government) and they are there until the end of April. After a short break they will return to the island in August for a further eight-month stint. Weekly skeds with the manager keeps the QSL cards coming.

QSL Route: WA3YVN

And now, here are some extracts from the 1995 **VP8SGP** DXpedition Report: Thanks are due to Al, WA3YVN, leader of the team for the information.

The team left South Georgia on January 15 after making some 18,000 QSOs. It is interesting to note that fully 10,000 of the QSOs were made on 30, 40 and 80 metres, so one can see where the majority of the propagation is these days.

The operation was cut short by four days due to changes in the schedules for the vessel. Weather never became a factor and the team worked well together.

A number of stations rate a special mention for their assistance in making the operation a success. These are: **WA4DRU**, **W9ARV**, **K8CLA**, **VP8WA**, **VP8ALJ**, **XQ8ABF** and **CE8CSF**.

The QSL cards have already been printed, and QSLs should be available soon from the QSL Manager, John, W4FRU.

QSL Route: W4FRU

DXCC activities

The last ARRL DXCC release received here by fax gave the following information:

Unprocessed applications stood at 178 (17,510 QSL cards). Some 434 applications (36,903 QSL cards) for endorsements and new awards had been received for the period.

The turnaround time was about one week — an incredible performance by DXCC staff. A few applications were in the process of being converted from the old paper records. As mentioned in this column previously, this process takes a little longer.

Western Sahara, S0

It is reported that **S01M** has been active from this rare DXCC country.

QSL Route: EA7EL

Also **KC0PA/S0** was active until the end of April. He had been reported on 14,265 and 21,265 kHz. Note as a portable operation this may not count due to lack of documentation.

QSL Route: KC0PA

Congo, TN

The scheduled activity from this rare DXCC country by a German group was to have been for one month. Previous TN activity has often been a problem, with no licence, documentation or whatever.

Due to delays in obtaining permission, this group's trip was an on and off affair. Finally they were okayed, with a limitation of four days on the operation, which was a result of the activities of the Congolese Secret Police!!

In their four days of operating **TN2M** and **TN4U**, the group made 13,100 QSOs on all bands and all modes, including RTTY and satellite. Not a bad effort under very difficult conditions...

The group went QRT on February 9.

QSL Route: DL7VRO

What a wonderful bunch we are... Hazel, **TN7OT** was driven off the 14226.5 kHz Net by hecklers — incredible.

QSL Route:

Hazel, **TN7OT**
BP 12,
Impfondo,
Republic of Congo.

Zone 23, UA0Y

Remember the days when Zone 23 was the ultimate QSO (not to mention QSL card) for the WAZ hunters? These days, Zone 23 is a much easier proposition with plenty of JT activity, however the UA0Y prefix allocation to the Tuva Region is also in Zone 23.

A DXpedition to Tuva signing UA0Y is being planned for late May or early June by the FAIRS group. The team expects to operate from Kyzyl, the capital of the Tuvan Republic (in Russia).

Five Russian operators, including **UA5WE**, **RB5WE** and **UA4LC**, plus a team from the USA, will form the DXpedition group. If you have further interest in this DXpedition contact Pat, **AA6EG**. No information on QSLing at this time.

Gaza, ZC6

The Gaza saga continues with a statement to hand from the RSGB, which has been advised that the ZC6 prefix is within the ITU block allocated to the UK. It is to be remembered the prefix ZC6 was used in Palestine, however the British Mandate over Palestine ceased in 1948.

The UK Radiocommunications Agency states that it has not authorised the use of the ZC6 prefix (which is still under its control) by any station in modern-day Palestine.

The QSL card for the recent JA operation from Gaza signing own call/GAZA is out, and very impressive it is too. The card states that the operation was officially allowed by the Ministry of Telecommunications and Post of the Palestine National Authority.

Since a new prefix has not been allocated to Palestine the operators used their own calls /GAZA — an interesting comment by outsiders visiting Gaza!!

I wonder how ZC6A and ZC6B feel...?

Vietnam, 3W

JR1TAG is now licensed as **3W6JP** and hopes to be very active on CW and SSB. Suggested frequencies are 7037, 7078, 14,010, 14,230, 21,010 and 21,430 kHz.

QSL Route: JR1TAG

Ethiopia, ET

Dragon, **YU1FW** has been very active from Addis Ababa signing **ET3YU** with good early morning signals on 20 metres SSB. He was worked here at 2230 UTC short path.

QSL Route: YU1FW

....☞

DX & BAND REPORT *(continued...)*

Montserrat, VP2M

Art, **VP2MDY** was very good copy long path at 2100 UTC on 20 metres SSB.

QSL Route: **NW8F**

Europa, FR/E

FR5HG/E is scheduled to be active from Europa Island until early May, and has promised activity on CW, SSB, RTTY and... wait for it... SSTV.

No further information at the moment.

Special event calls

Luxembourg

The call **LX95VEC** has been allocated for use by Luxembourg's radio clubs to celebrate Luxembourg's declaration as the "Cultural City of Europe".

QSL Route: **LX1NO**

Thailand

If you worked **E25CMU** you caught an operation by a group of Thai radio amateurs from the Chiang Province of Thailand, which is some 700 km north of Bangkok.

E25 is a new prefix for those chasing WPX.

QSL Route:
E25CMU,
PO Box 19,
Fang,
Chiang Mai 50110
Thailand.

Andorra

C37US is a special event callsign using the C37 prefix allocated to C31 stations to mark the 15th anniversary of their National Radio Society, called *Unio de Radioaficionats Andorrans* (URA).

Saudi Arabia, HZ

Terry, who has been the chief operator at **HZ1AB**, is due to leave after 14 years in the country! I was privileged to operate HZ1AB many years ago when I was project manager for the International Airport at Dhahran. Those were the days of the famous HZ1AB rhombics — not to mention a bit of power — and the pile-ups were always horrendous.

We wish Terry, **N4KT** a happy time on his relocation back home to Florida.

Russia, R3

How times have changed! Mike, **W0YR**, on a three-year assignment to Moscow, is on the air as **R3/W0YR** and he promises activity on RTTY and CW.

QSL Route:
AA9DX,
PO Box 923,
Wood Dale,
Illinois 60191-0923
USA.

New R3 Bureau

There is a new **Russian QSL Bureau** up and running. We will miss the old Box 88, Moscow!! Here are the new details:

SRR,
PO Box 59,
105122 Moscow
Russia.

Conway Reef, 3D2C

In the last issue, the planned operation to Conway Reef was mentioned with the available information at the time. An update now includes the addition of another operator Jun, **JH4RHF** added to Matts, **SM7PKK**; Gary, **NI6T**; Nils, **SM6CAS** and Pekka, **OH1RY**.

Callsigns are:
3D2CU for CW/RTTY
3D2CT for SSB

QSL Routes:
3D2CU
Matts Persson, SM7PKK,
Zenithgatan 24 #5,
Malmo,
Sweden.

3D2CT
Philip Marsh, G4WFZ,
28 Orcheston Road,
Bournemouth,
BH8 8SR Dorset,
England

UAR, A6

It is reported that **A61AH** is in the USA and having QSL cards printed for his home call. Thanks is due to **WB2DND** who has been very active from A6 over the last few years.

Results of the 1994 OPDX/NODXA survey

The 1994 *DXer of the Year* is Rudi, **DK7PE**. There were 33 DXers nominated. OPDX suggests that, out of the 33, **G3SXW**, **VK9NS** and each member of the **3Y0PI** team should receive an honorable mention.

1994 DXpedition of the Year (by a group) was **3Y0PI** There were six nominations.

1994 DXpedition of the Year (by an individual) was **TN0CW** by Rudi, **DK7PE**.

The 1994 most-wanted countries are Libya, Andaman Islands, Heard Island, Bhutan, Kermadec, Yemen, Macquarie, Tunisia, Amsterdam Island and Mount Athos.

Ivory Coast, TU

Jim, **TU4EI** / **TU5EV** will have left the Ivory Coast by the time you read this. Jim was very active, and his signal on 40 metres was always very good.

QSL Route: **W4HCW**

South Shetlands

Andy, **DL7VTS** continues his activity signing **DP1KGI** from Ardley Island in the South Shetlands. It is reported that he may be QRT soon returning home to Germany.

QSL Route: **DD6UAB**

So that's about it for this issue. It has been a busy few weeks with several visitors including my two eldest sons.

I have just replaced the smallest-ever component in all my years of communications. I was in QSO with ZL1ARY on 14,260 kHz and on the receiving end of his melodious voice when there was the shortest of 'clicks' and the receiver of my TS-690S went silent... dead quiet. You know that sinking feeling??

When I finally got around to checking it, I found the fault in about an hour, including taking the thing apart. The component at fault was C7 on the R/F Unit Board and it is a 0.1 µfd chip capacitor showing a classic short circuit. (I love capacitors which measure zero ohms!)

I now really know why they are called 'chips'. I am not kidding, this capacitor is all of 2mm square and maybe about 2mm thick. In short — minuscule. Talk about bridging the gap — you can imagine how large a gap was involved! In replacing the shorted component with the smallest 0.1 capacitor in my spares all I will say when pressed is this: it is several orders larger than the C7 I removed!

Why do they do this to us?

To the many who keep me informed on the bands, by fax, letter and telephone, many thanks.

A special thanks is due to the following DX outlets which keep the DXer informed on a regular basis of band activities, etc: **QRZ DX**, **Long Skip**, **JA 59 Newsletter**, **NJDXA Newsletter**, **ARRL DXCC**, **Nouvelles DX**, **RSGB DX News Letter**, **Les Bacores DX**, **Lynx DX Bulletin** etc.

ISLANDS ON THE AIR (IOTA)

By Jim Smith, VK9NS, PO Box 90, Norfolk Island, South Pacific 2899

The venue and date for the 1995 IOTA Convention has now been decided. The convention is scheduled to take place in Bologna, from October 13-15. This weekend will coincide with celebrations to commemorate the 100th Anniversary of the discovery of radio by Marconi. The IOTA convention is kindly sponsored by the Associazione Radioamatori Italiani (ARI).

As it happens, I will be in Europe at around that time (at the invitation of the Swedish radio amateurs), so I will do my best to attend the IOTA Convention.

IOTA activity has been quite high these last few weeks, and a couple of new ones have been worked. However, I have been very busy with the IOTA Check Point computer system.

The promised program 'fixes' arrived a few days ago and, although it is early days yet, it seems that most glitches have now been cleared. There are still a couple of annoying things when using the program, but they too will be fixed.

The situation is that I can now generate a Members IOTA Disk for mailing to IOTA Hunters. If they are already a member, then their initial data is on this disk. On receipt of the disk they can then enter the new islands they are claiming — in other words, updating their previous total. Note they have no control over whether their claim is okay or no. In other words, the member enters VK9NS for Timbuktu Island, OC XXX.

The system will always accept this with no queries at all. However, the system will tell them if they have claimed an island previously.

In due course the disk ends up back at the Check Point and is brought into the member's database and the main IOTA dBase held at the Check Point. Once again, anything is accepted — even that claimed OC-XXX.

However, the difference is that each questionable entry is listed and can be printed out. It is at this point that the Check Point now validates (or rejects) these entries being questioned.

The ones being rejected by the Check Point scrutiny are now marked as deleted — and, sadly, that VK9NS call for OC-XXX is zapped.

However, the ones that are okay have been added to the DBase. Next time that call is entered for Island Y it will have no query generated.

Finally, the Check Point DBase is then exported to the IOTA UK and, as a result, any additions will be merged and a new Check Point DBase produced.

At that point in time HQ and the Check Point are once again in step.

There will be a series of 'Shut Down' periods when no new data is entered at the Check Point. This will allow the IOTA HQ update to take place — all additions accepted (or not) and the like. The updated DBase then allows the Check Point to carry on for another period on time.

Now, here are the newies:

AF-003	ZD8Z	Ascension Island	QSL VE3HO
AS-103	BV9AAA	P'eng-Hu Island	QSL BV2KI
EU-001	SV5AZP	Dodecanese	QSL C.B.A.
EU-039	F6KFV	Chausey Island	QSL F6KFV
EU-048	F5GVH/P	Belle Ile	QSL F6GVH
EU-067	SV8/DL7RM	Paros Island	QSL DL7RM
EU-088	OZ/DL3BQA	Laeso Island	QSL DL3BQA
EU-141	LA5SJA	Vardo Island	QSL LA5SJA
EU-165	IS0USB	Sardinia Coast Island	QSL C.B.A.
EU-169	ZA0B	Sazan Island	QSL HB9BGN
NA-021	8P9NX	Barbados	QSL W0SA
NA-062	WB8YJF/4	Key West	QSL WB8YJF
NA-069	K2OLG/P	Black Island	QSL K2OLG
NA-072	HP1/DL8SEP	Panama/Darien	QSL HP1VXH
NA-135	XE1BGM/3	Carmen Island	QSL XE1BGM
OC-004	VK9LM	Lord Howe Island	QSL DJ5CQX
OC-079	FK/DL2GAC	Belep Island	QSL DL2GAC
OC-168	H44MS	Russell Island	QSL DL2GAC
SA-012	YV7/N2AUK	Margarita Island	QSL N2DLV
SA-035	YV5ANF/P	Los Roques Island	QSL YV5ANF
SA-053	CE7LHG	San Pedro Island	QSL CE7LHG
SA-054	YV5IVB/P	La Orchilla Island	QSL YV5IVB
SA-058	4M5I	Farallon Island	QSL I2CBM
SA-064	CE7AOY/P	Las Huichas	QSL CE7ZK
SA-067	4M8I	La Cotorra Island	QSL YV5ANI

Noted

IK1EDC says that the QSL cards for his recent SA IOTA Operations have been received and are in the hands of the respective QSL managers.

7Z1IS/P QSL cards are still coming out in small numbers but Selim, **OE6EEG** promises all cards will be cleared this month.

Up and coming IOTA activity

AF-045	5H	Mafia Island	Late March	I4LCK
AF-???	5H	Nyuni Island	Late March	I4LCK
AF-???	5H	Boydu Island	Late March	I4LCK
EU-006	EJ	Inishman Island	13th May - 19th May	

QSL Route CHB ARG, PO Box 803, Hull, HU7 4BY, England

OC-203	G4CVC/ZL	Stewart Island	April	G4CVC
OC-???	YB	Enggano Island	Late March	QSL YB0RX

The QSL cards are coming in with several noticeable delays, however most stations are very good.

So that's it for the moment — if you are still not in the IOTA Program think about it. With a Pacific Check Point at your fingertips, many very active VK, ZL and Pacific stations and quite a few islands in your back yard, it's fun.

Happy Island Hunting from 73 Jim, VK9NS.

Propagation

East - England (short path)

```
28.5
24.9
21.2        ....
18.1      ...%%.....  .
14.2 .   AAAFFF%%%%%.%%.......
10.1                 AFF%%F
 7.2                   FFFF
 3.6                   FFF
 1.8                   FFF
 0.9                   FFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - England (long path)

```
28.5
24.9
21.2                     ..
18.1         ...         .%.
14.2 ...    %F%%..AA     %F%%.
10.1      A%F
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

ABOUT THESE CHARTS

The data on these pages are graphs showing forecasts for expected HF operating conditions between Australia and a number of important DX destinations. The information they contain is prepared by **IPS Radio and Space Services**, a division of the federal Department of Administration Services. IPS monitors changing radio conditions - which are affected most greatly by fairly predictable changes in solar activity - and issues reports and warnings based on that data.

Stations in the eastern half of Australia should refer to graphs on the left hand page. The data on the right hand page is calculated for stations in the western half of the continent. Of course, if your location is in the middle of the continent try reading them *both* - then make an educated guess.

The horizontal axis of each graph represents the hour of the day expressed in Universal Co-ordinated Time or UTC ("z"). The vertical axis lists specific point frequencies within reach of each HF amateur band.

The maps are easy to read. First go to the map which looks closest to the area in which you are interested. Look *up* from the time and *across* from the selected band to the point at which the two variables merge. Note which symbol - if any - appears at the intersection of the particular time and frequency combination for that area and refer to the legend (right) to find the sort of propagation most likely to apply. If the space is blank the forecast is not good - your time and frequency combination is unlikely to allow communication to the destination station.

East - Central and East Coast USA

```
28.5
24.9 ..                      .
21.2 ...                 %%%%.
18.1 %%%.           ..   %%%%%
14.2 AFF%.....   %%%%%AAAAAAAA
10.1       %%%%%%FA
 7.2        FFFFFA
 3.6        FFFFF
 1.8        FFFFF
 0.9        FFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - West Coast USA

```
28.5 .....                 ...
24.9 %%%%.                .%%%
21.2 SSS%%.               .%%SS
18.1 SSSSS%.   ..   ..   %SSSS
14.2 AASSSS%%..%%%..%%...AAAAA
10.1       SSSSMMMMMS
 7.2        SSSMMMMM
 3.6        SSSMMMMM
 1.8        SSSMMMMM
 0.9        SSSMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - South America

```
|B  BOTH E&F MODES 90% OF DAYS
===============================
 PERTH-SAN FRANCISCO      1474
 28.5 .....
 24.9 %%%...                 .
 21.2 %%%%%.                .%
 18.1 FFFF%%.               %F
 14.2 AAAAFF%%..........%%AAAA
 10.1         AFFFF%%FA
  7.2          FFFFFFF
  3.6           FFFFF
  1.8           FFFFF
```

East - West Indies

```
28.5 ..                    ...
24.9 %%....               ..%%
21.2 %%%%%....           .%%%%
18.1 FF%%%%%...          %FFFF
14.2 FFFFFF%%%.......AAAAAAFFF
10.1       FFF%%%F
 7.2        FFFFFA
 3.6        FFFFF
 1.8        FFFFF
 0.9        FFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - Japan

```
28.5  ..%%...
24.9 .%%MM%%%.             ...
21.2 %%SMMSS%....         .%%%
18.1 SSSMMSSS%.%..... .   %SSS
14.2 SSSMMSSSS%M%%%%%... .SSSS
10.1        ASSMMMMMMSS%%%SA
 7.2          SMMMMMMSSSSS
 3.6          SMMMMMMSSSSS
 1.8          SMMMMMMSSSSS
 0.9          SMMMMMMSSSSS
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - Central Europe

```
28.5
24.9
21.2       .....
18.1     ..%%%%.....  ..
14.2    AAAAAFF%%%%%%%%......
10.1                AFFF%%%A
 7.2                  FFFFF
 3.6                  FFFF
 1.8                  FFFF
 0.9                  FFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - Middle East

```
28.5      ....
24.9   ....%%%.
21.2   .%%%FF%..
18.1  .%FFFFFF%...
14.2 .%FAAAAAAA%%%%%%%%.......
10.1              AFFFFFF%F%
 7.2               FFFFFFFF
 3.6               FFFFFFFF
 1.8                FFFFFFF
 0.9                FFFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - North Africa

```
28.5
24.9       ....
21.2      .%%%..
18.1      %FFF%...     .
14.2 ....AAAAAAAAA%%.%%%%..%..
10.1                 AFFFFFF
 7.2                  FFFFF
 3.6                   FFFF
 1.8                   FFFF
 0.9                   FFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - West Africa (short path)

```
28.5
24.9         .
21.2 ..     .%.             ..
18.1 %%.    %F%.           .%%
14.2 F%%.. .FFF%AA         FFF
10.1                   ...%F
 7.2                   AFFF
 3.6                    FFF
 1.8                    FFF
 0.9                    FFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - West Africa (long path)

```
28.5
24.9                      .
21.2         ..          .%.
18.1 . ..   .%........   %%...
14.2 AAA%.. %F%%%AAAA%...FFAAA
10.1       AFA
 7.2        F
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

East - South Africa

```
28.5       ...
24.9      .%%%.
21.2     .%MMM%.
18.1     %SMMMM%.
14.2 ....MSMMMMM%...       . .
10.1              AMMM%.%%MM%
 7.2                MMMMMMMM
 3.6                MMMMMMM
 1.8                MMMMMMM
 0.9                MMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

forecaster May 1995

LEGEND TO SYMBOLS

- **.** Propagation is possible, but unlikely at this time and frequency on more than half the days of the month.
- **%** This frequency/time pair should allow communications on between 50% and 90% of the days of the month.
- **F** Your best bet: first "F" mode conditions should apply on at least 90% of days this month for the given time and frequency.
- **E** Propagation via the "E layer" expected on up to 90% of days of month at this time and frequency.
- **P** A fair mixture: up to 90% chance of a path using "F mode" and between 50% and 90% probability of an "E layer" path.
- **B** A good mixture: up to 90% chance of a path using either "E layer" or mixed "F" modes.
- **M** A good mixture of combined "F" modes - both first and second mode up to 90% of the time.
- **S** Second "F" mode conditions should apply on at least 90% of days this month for the given time and frequency.
- **A** High atmospheric absorption of the signal is likely - better to use a higher band. Too close to the ALF for good HF signals.

West - England (short path)

```
28.5
24.9
21.2       .......
18.1      .%%%%%%..
14.2 ....%AAAAAFF%......... ..
10.1 %               AFFFF%%F%
 7.2                  AFFFFFF
 3.6                   FFFFFF
 1.8                   FFFFFF
 0.9                   FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - England (long Path)

```
28.5
24.9
21.2
18.1         ....           .
14.2 ..     .%F%%...       %%.
10.1         A
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - Central and East Coast USA

```
28.5
24.9
21.2 ...                    ..
18.1 %%..              .   .%%
14.2 AAAAA       ..........AAA
10.1          ..%FA
 7.2          AFF
 3.6           FF
 1.8           FF
 0.9           FF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

Perth - West Coast USA

```
28.5 .....                   .
24.9 %%%...                 .%
21.2 %%%%%.                .%%
18.1 FFFF%%.               %FF
14.2 AAAAFF%%..........%%AAAAA
10.1         AFFFF%%FA
 7.2          FFFFFFF
 3.6           FFFFF
 1.8           FFFFF
 0.9           FFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - South America

```
28.5
24.9
21.2 ....                    .
18.1 %%%%.....  .            %
14.2 FFFF%%%%%  %..         %F
10.1 F        %%F         A.FF
 7.2           FA          FF
 3.6           F           F
 1.8           F           F
 0.9           F           F
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - West Indies

```
28.5
24.9 ......                  .
21.2 %%%%%%..               .%
18.1 %FFF%%%%..             %%
14.2 FFFFFFF%%.....        .FF
10.1         F%%%F
 7.2          FFF
 3.6          FFF
 1.8          FFF
 0.9          FFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - Japan

```
28.5   .%......
24.9 ..%%%%%%%..             .
21.2 %%SSSSSSS%.            .%
18.1 SSSSSSSSSS%. ..        %S
14.2 SSSSSSSSSSS%.%%...... .SS
10.1         ASSS%MMSS%%%%.%
 7.2           SSSMMSSSSSSS
 3.6           SSSMMSSSSSS
 1.8           SSSMMSSSSSS
 0.9           SSSMMSSSSSS
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - Central Europe

```
28.5
24.9          ...
21.2      ...%%%%.
18.1     .%%%%%%%..
14.2 ....AAAAAAFF%......... ..
10.1 %               FFFFF%%F%
 7.2                  FFFFFFF
 3.6                  FFFFFFF
 1.8                  FFFFFFF
 0.9                  FFFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - Middle East

```
28.5    ...%%%%..
24.9    %%%%MMM%.
21.2   .MMMMMMMM%.
18.1   %MMMMMMMMM..  .
14.2  .MMMMMMMMMMM%..%%.... .
10.1 MS          AMMMMMMMMM%MM
 7.2               MMMMMMMMMM
 3.6                MMMMMMMMM
 1.8                MMMMMMMMM
 0.9                MMMMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - North Africa

```
28.5           .
24.9       ....%.
21.2      .%%%%%%.
18.1      %FFFFF%.
14.2 .....AAAAAAAA%........ ..
10.1 F               AFFFFF%FF
 7.2                  FFFFFFF
 3.6                   FFFFFF
 1.8                   FFFFFF
 0.9                   FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - Wes Africa (short path)

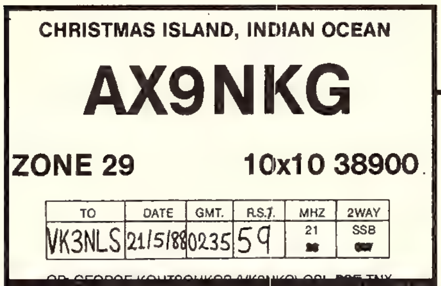
```
28.5         ..
24.9  .     .%%.
21.2  ..    FFF%.
18.1 .%..  .FFFF%.           .
14.2 %F%.. %FFFAAAA......... %
10.1 FA               A%%%F%%F
 7.2 F                 FFFFFFF
 3.6                   FFFFFF
 1.8                   FFFFFF
 0.9                   FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - West Africa (long path)

```
28.5
24.9          .
21.2    .    .%.           ..
18.1 .....   %%...         %..
14.2 AAAA%...FF%%AAAAAAAAAAAAA
10.1         A
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

West - South Africa (short path)

```
28.5       ...
24.9      ..%%..
21.2      %%MM%%.
18.1     .MMMMMM%
14.2 ..  FMMMMMMM...         .
10.1 MM  AAASAAAASMM%%%%%%%%%M
 7.2 M              MMMMMMMMMM
 3.6                MMMMMMMMM
 1.8                MMMMMMMMM
 0.9                MMMMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```



CHRISTMAS ISLAND, INDIAN OCEAN

AX9NKG

ZONE 29 10x10 38900

TO	DATE	GMT.	R.S.T.	MHZ	2WAY
VK3NLS	21/5/88	0235	59	21	SSB

DX UPDATE

WHAT'S HAPPENING OUT THERE?

3Y BOUVET ISLAND

UA9OBA will be traveling throughout the Antarctic and Arctic beginning in June. He plans to activate a few new IOTAs in his travels (Nanskian Island and Scott Island). He will end his long trip in late October/November to activate Bouvet Island (AN-002).

4X ISRAEL

Riki, 4X4NJ, was active during most of March on 160 meters 20 minutes before and after his sunset. He is usually on or around 1830 kHz and listening up a few hundred Hertz.

9K KUWAIT

Faisal, 9K2HA, reports that all foreigners in Kuwait must now sign 9K2/homecall as of March 1st. BE ADVISED that some callsigns issued to some foreigners are now assigned to Kuwaiti nationals (ex. 9K2ZZ now belongs to Faisal, ex-9K2HA. QSL via ON6BY). Ray, W8CNL, QSL Manager for 9K2ZZ (before March 1st) reports the following changes as of March 1st:

9K2ZZ is now 9K2/N6BFM ... QSL Manager W8CNL
9K2ZC is now 9K2/KI0K ... QSL Manager KC4ELO
9K2YY is now 9K2/N0YKI ... QSL Manager KC4ELO

Ray also reports that all cards received for contacts made with 9K2ZZ after March 1st, will not be answered or forwarded to Kuwait, so PLEASE check the QSL info with the station you have worked. New cards are being printed for the stations listed above, so PLEASE be patient.

SPECIAL EVENT

The Special Olympics World Olympic Games will be held in July at New Haven, CT. Special Event Station, W1SO, will be located at these games and be active from July 1 through July 9th. It was reported that there will be multi transmitters/operators involving many hams from many radio clubs in the area. More details will be forthcoming.

9Q ZAIRE

Peter, ON6TT, continues to be very active as 9Q5TT. He was heard several times during March operating RTTY on 20 meters starting around 2030z

A9 BAHRAIN

The DX News Letter (DXNL) reports that Admiral Scotty Redd, USN (K0DQ) is currently signing A92Q and is often active on 40 meters CW. No other details are available. QSL via Box 116, Manama, Bahrain.

J6 ST. LUCIA

Peter, DK1RP, will be active from here, April 11-29th as J6/DK1RP. His activity will be mainly on CW and on the WARC bands. All QSOs will be confirmed via bureau automatically.

TI9 PIRATE

A station continues to operate as AA2JS/TI9 and it has been suggested to ignore and not to carry on a QSO with this station. Scott, AA8SM, talked to the wife of AA2JS and she stated that he is NOT in TI9. She also mentioned that a lot of QSL cards are being received and to inform everyone NOT to QSL this station.

TN CONGO

A new "YL" operator named Hazel has been heard recently signing TN7OT on 14220 kHz around 1945z.

USCG STATION'S KEY HAS GONE QRT

U.S. Coast Guard Communications Area Master Station Atlantic (CAMSLANT) "NMN" in Virginia Beach ceased HF Morse code operation on April 1,1995. A final message was broadcast on April 1,1995 at 0001z on 5.870, 8.471, 12.718.5 and 16.976 MHz. NMN will issue a special certificate to those who copied this final message. Submit your copy of the received message to USCG CAMSLANT, c/o NSGA Northwest, Chesapeake, VA 23322. Attn: TC3 S. Morales (KP4FFW).

XF0C CLARION ISLAND

There seems to be some confusion on what this station counts for DXCC. The answer is "Revillagigedos". Clarion Island is one of Revillagigedos group, along with San Benedicto, Roca Partida and Isla Socorro (which was active last October by a group using the callsign XF4M). QSL XF0C via XE1BEF or Box 231, Colima, Mexico, 28000.

ZD8 ASCENSION ISLAND

G4RWD is reportedly on the air as ZD8WD until September. Not much information is available on this one as far as band activities.

ZS9WRT

This station was not active from Walvis Bay, but was a Special Event Station at the World Rugby Tournament. QSL via ZS6AJS.

PAKISTAN

Reports indicate that Rudi, DK7PE, is in Pakistan. He is looking for an active DXer in Karachi so he may be on the air soon.

THAILAND

A group of Thai hams were expected to activate a new prefix March 11 and 12 using the call E25CMU. If you worked this callsign QSL via PO Box 19, Fang, Chiang Mai THAILAND 50110 or via the bureau.

EUROPA

It is reported that FR5HG will be active from Europa for 45 days starting March 8. Activity will be on RTTY, SSTV, SSB and CW on 40 through 10 meters.

CHASING PYøTUP?

If you're chasing a QSL from PYøTUP you should send your card to VK3SEX, 81 Bishop St, Yarraville, 3013 who will arrange to bulk mail them to operator Jaou and have him return them the same way.

DL POEL ISLAND, GERMANY (IOTA EU-098)

DL6CGC and DL8CZG will be active from here signing /p, May 25-28th. Activity will be on 80-10 meter, SSB/CW/RTTY and 2 meter SSB/CW. Also check the usual IOTA frequencies.

JW SVALBARD

Three "YLs" (young ladies) will be operating from Spitsbergen Island in the Svalbard Archipelago (IOTA EU-26), April 8-12th. The trio will be using a synthesized portable radio with 25 watts output power to a dipole antenna using limited battery power. They will be using the SSB frequencies of 14247 and 21247 kHz plus some CW operation on 80-10 meters. Their radio has no provision for split frequency operation. Please consider their limited battery power available, and make QSOs short by exchanging RS(T) only unless requested otherwise. The following operators will use the following callsigns: Unni - JW6RHA. QSL via LA6RHA; Turid - JW9THA. QSL via LA9THA; and Inger - JW8KT. QSL via LA8KT.

SOUTHEASTERN DXPEDITION

Mike, DF8AN, will be traveling to a few Southeastern Asian countries. He will leave Germany on April 21st, to fly to Kathmandu, Nepal (via Bangkok, Thaailand). He has applied for a visitor's 9N1 callsign, but he may use 9N1/DF8AN call between March 22 and April 5th. His activity will be mostly on CW. From Kathmandu, he will fly to Hong Kong and will be active with a VS6 callsign or VS6/DF8AN call for one week between April 6 and 13th. During this period he will visit Macao and apply for an XX9 call sign. Between April 13 and 24th, Mike will be active from the island Koh Samui, Thailand and try to get a visitor's licence for HS/DF8AN. Mike will only be active on 40/15/6 meters from all locations. QSL via the bureau (DF8AN) or direct to: Michael Noertemann, Amselstieg 4, D-38226 Salzgitter, Germany

5T MAURITANIA

I2RLX, IT9AZS, IT9JNT and IT9PHY are planning a DXpedition with the call 5T0AS, from April 1-20th. They will be active on all bands CW/SSB. If possible they will activate IOTA-island AF-050 (Ile Tidra in the Nouadhibou/Akjoujt Province Group) as 5T0AS/p. QSL via IT9AZS.

VK0, HEARD ISLAND DXPEDITION UPDATE

The South Sandwich Island DX Group is pleased to announce the newest team member Verne Fowler, W8BLA, of Roswell, Georgia. Verne is an Extra Class operator and has operated from HB0, ZF9 and as ZF1DX in the contest last month. Verne will be filling one of the CW operator's positions on the team with his 40 wp CW speed.

According to Tony, WA4JQS, Director of Operations of the SSIDXG, the environmental impact statement for landing permission on Heard Island was summitted in mid-February by team member Ed DeYoung, VI0ANT. At this time they are waiting on action by the Hobart government on this.

ZK3 TOKELAU

Ron, ZL1AMO, had to cancel his planned activity from T31 in April due to some transportation problems. Instead of this he hopes to become active from ZK3-land.

3D2 CONWAY REEF

Latest report (March 27) says that the 3D2CU DXpedition which was to begin on March 24th, had run into some unexpected problems. Garry, NI6T, operating as 3D2CU/mm reported that the team had arrived at the island but, due to rough seas, they had been unable to transport all the equipment and team members ashore. They lost some equipment when one of the rubber rafts overturned. They are currently waiting for the seas to calm to finish unloading. As this was being written, no activity has been reported. The DXpedition team was hoping to participate in the WPX contest and to be active until April 3rd (as reported by their last press release).

8Q MALDIVE ISLANDS

Juergen, DL1IAI, will be on Kuredu Island, from April 12-27th. He has requested the callsign 8Q7AI, but has not yet received the paperwork. He plans to operate on 80-10 meters and if possible 160 meters. QSL via CBA.

EX (ex UM8) KYRGHYZSTAN

Yuri, EX0A, Executive Director of Amateur Radio Union of Kyrghyzstan, advises the following information about amateur radio operators in his country: All radio amateurs in his country use the prefix - EX. Prefix structure is as follows:

EX9	- Club stations
EX0,2,5,6,7,8	- All individual callsigns
EX1,3,4	- Special callsigns
EX/homecall	- For foreign operators callsign only.

Presently, there are only 4 foreign stations that have a LEGAL LICENCE: EX/DF8WS (QSL via DF8WS), EX/DK7ZT (QSL via DK7ZT), EX/N0LAZ (QSL via DL4MFM) and EX/KD6BKL (QSL via DF8WS). The following are operating without a licence: N6AMC/UM8, EX/RZ4FZT, EX/UA4FAO, EX/UA4FAY and EX/DL1BCL. Yuri states, PLEASE do not send QSLs for stations with UM, RM and EX prefix to the Russia QSL-bureau in Moscow. We have not received any QSLs from the Russian QSL-bureau for about 3 years. And also note: ARRL, JARL and many others QSL-bureaus send all cards for us to Moscow, very sorry but our HAMs will not receive these QSLs. Our radio amateur organization's national QSL bureau (for UM,RM and EX) is:

P.O.Box 1100
Bishkek -20
720020
Kyrghyzstan, CIS

NEW QSL MANAGER

Ken, V73C, now has a new manager - Bruce, N4GAK. Send all V73C cards to: Bruce Smith, 15 Henderson Dr., Fayetteville, TN 37334.

P5 NORTH KOREA

A station signing P5BK has been reported active during mid-March. The station's activity has been on 15/20 meters CW between 2230 and 0000z, plus stating to QSL via JA1BK. ONLY one thing to say, "WFWL".

POSSIBLE FJL RADIO SHUTDOWN

Ed, NT2X, reports he had a conversation with Slava, RX1OX/FJL, operating from Franz Joseph Land, and was told that a possible shutdown of the polar base may happen due to budget constraints.

It can happen within the next several months, and if it does, then all personnel will be removed to the mainland. This would mean that FJL will no longer be represented on the air. Currently active from FJL are R1FJL (ex-4K2MAL and last heard on March 24th, on 14014 kHz at 2253z) and RX1OX/FJL (last heard on March 4th, on 14237 kHz at 0123z).

QSL INFO

DL5UF, DK1CE and DF5WA who were active from Madagascar (5R) from February 25th through March 10th, provide the following QSL routes.

QSL via bureau or direct 5R8EH via DL5UF, 5R8EI via DL2GBT and 5R8EJ via DF5WA.

SHORTWAVE LISTENING

All times are expressed in Coordinated Universal Time (UTC or 'z'). Add 10 hours for Eastern Standard Time, 9.5 hours for Central Standard Time, 8 hours for Western Standard Time and 12 hours for New Zealand Standard Time.

A new youth for shortwave?

Anyone who has looked deeply enough into the home cinema craze will undoubtedly have come across the term **Pro Logic** in reference to certain receiving equipment used for this application.

But how about **ID LOGIC**? Could this be something similar, or at least a close relation?

Not quite; whilst Pro Logic is a technique through which the reverberated sound of a theatre or concert hall is mimicked, ID LOGIC is being touted as a new coding standard for digital signals which will finally make shortwave completely user friendly.

During January of this year, several of the major international broadcasters and receiver manufacturers of the world met in Hong Kong for the ID LOGIC Shortwave Conference, convened jointly by the **BBC World Service** and **PRS Corporation**.

At issue was the in-receiver database technology developed by PRS Corporation, which will allow broadcasters to send their frequency schedules in digital format over the air to memory banks within receivers.

This will supposedly permit listeners to tune to their desired broadcaster and programming language at the touch of a button.

The broadcast schedules will contain all the necessary information such as frequencies, broadcast time and days, languages, target areas and the like. According to its developers, ID LOGIC will virtually render obsolete frequency guides, which tend to be out of date from the day they leave the press due to changing propagation conditions and interference problems.

ID LOGIC SW is said to overcome this problem by maintaining a database in the receiver's memory (which is updated by the broadcasters themselves via digital transmissions) and control software stored on a proprietary microchip.

Two modes of transmission are provided for — one audible, the other silent.

There are advantages to both methods and it was agreed to use the same (base band) encoding method for both modes, thereby simplifying receiver design and cutting retail cost to the consumer.

The base band encoding of the data will use the AMDS (Amplitude Modulation Data System) format developed in Europe (a cousin of the RDS system widely used there for digital data transmissions in FM broadcasts). An early emphasis will be placed on the audible method as it requires no special hardware installation at each transmitter site. In this mode, it is envisaged that short bursts of digital transmissions will be broadcast regularly, perhaps at the beginning or end of language segments.

The data will be broadcast using a method such as Frequency Shift Keying (FSK), which sounds something like the noise produced by a modem or fax. Using this audible method, transmission speeds of 2400 bits per second are being talked about.

Although the data transmission rate in the silent mode will be much slower (200 bits/sec), it will have the advantage of being continuous and transparent to the listener, providing on-line identification of the transmissions.

A disadvantage is that special hardware is required at each end of the equation, both at the transmitter site and a somewhat more expensive implementation in the receiver.

Germany's **Radio Deutsche Welle** is said to be already radiating schedule information, on-line identification and tuning data in the silent mode from some transmitter sites.

Present at the conference were most of the members of the ID LOGIC SW consortium, an informal group of shortwave broadcasters, including the BBC World Service, Voice of America, Radio Canada International, Radio France Internationale, and PRS Corporation. Also on deck were representatives from receiver manufacturers Philips, Sangean and Sony.

The AM/FM form of ID LOGIC has already been licensed to electronics giants such as Sony, Kenwood, Panasonic, Pioneer, Alpine, and others, primarily for car radios and most recently for in-personal computer receivers. In some countries, the system is used to help the listener to find and automatically identify a station by its name format and location. In its AM/FM implementation, the in-receiver database contains the descriptions of the 14,000+ North American radio stations.

On shortwave, over the air tests are planned for 1995, and initial commercial implementations may follow as soon as 1996. I suppose that the question on everyone's lips will be whether they need to invest in a new receiver to take advantage of this technology. As an educated guess, the answer is 'probably'.

A challenge for vendors of ID LOGIC might be to invent outboard units for use by those who already possess receivers that are microprocessor-based, or at least some form of interface for the humble personal computer.

This news based on a press release from the ID LOGIC SW Conference participants, released on the Internet.

Netherlands

Here is the latest schedule for English from **Radio Nederland** in Hilversum:

To the Pacific
0730-0825z B11,895, B9720 kHz
0830-0925z B9720 kHz
0930-1025z B9720, C13,705, C12065 kHz
1030-1125z C13,705, C12,065 kHz (also to the Far East and South East Asia)

To Europe
1130-1325z F9650, F6045 kHz
2030-2125z C1386 kHz

To Asia
1330-1625z M15,150, M9890 kHz
1330-1425z F13,700 kHz
0030-0230z C7305, C5905 kHz
0130-0325z M11,655, M9860 kHz

To Africa

1730-1825z F11,655, M7120, M6020 kHz
1830-1925z B17,605, B15,315, M7305, M6020, F13,700, F11,655, F9895, F9860 kHz
1930-2025z B17,605, B15,315, M7305, M7120, F11,655, F9895, F9860 kHz
2030-2125z F11,655, F9895, F9860 kHz

To North America
2330-0125z B9840, B6165 kHz
0430-0525z B9590, B6165 kHz

Transmitter sites:
B= Bonaire, Netherlands Antilles
C= Leased facilities in the Commonwealth of Independent States
F= Flevoland, Netherlands
M= Madagascar relay

KGEI to return?

Again we find ourselves looking at **KGEI**, the now-defunct Christian broadcaster operated by the **Far East Broadcasting Company**, and formerly of San Francisco.

It is rumored that these historic call letters may in fact be once again voiced on shortwave; the 50 kW transmitter that KGEI used for many years has been shipped off to Liberia, where it will be used by station **ELWA**, owned by SIM International.

The 250 kW unit, however, is destined for Twin Falls in Idaho, having been donated to the Calvary Chapel. Transmissions are set to recommence using the same callsign, once again targeting Latin America, primarily in Spanish. Further developments as they occur!

This news courtesy of Dr Adrian Peterson, via Adventist World Radio's *Wavescan* program.

MRI Schedule

Monitor Radio International has issued its frequency schedule for the 'Z-95' transmission period, which shows Monday to Friday broadcasts of the radio edition of 'The Christian Science Monitor' as follows:

From **WSHB**, Cypress Creek, South Carolina:
To Africa: **0500-0700z** on 11,650 kHz, **1600-2000z** on 17,510 kHz.
To Europe: **0400-1000z** on 7535 kHz, **1800-2200z** on 15,665 kHz, **2000-2100** & **2200-0000z** on 13,770 kHz.
To North America: **0000-0200z** on 7535 kHz, **0200-0400z** on 5850 kHz, **1000-1400z** on 6095 kHz, **2100-2200z** on 13,770 kHz
To Mexico: **0200-0300z** on 9430 kHz, **1300-1400z** on 9455 kHz
To Central & South America: **0000-0200z** on 9430 kHz, **0900-1200z** on 7395 kHz, **1200-1300z** on 9455 kHz, **2200-0000z** on 13,770 kHz
To the Caribbean: **0000-0100z** on 7535 kHz, **1000-1300z** on 6095 kHz

From **KHBI**, Saipan, Marianas Islands
To Africa: **1600-1800z** on 9355 kHz
To Europe: **1800-2000z** on 13,770 kHz
To North East Asia: **0900-1100z** on 9430 kHz, **1100-1200** & **1400-1600z** on 9355 kHz, **2200-2300z** on 13,625 kHz, **2200-0000z** on 15,405 kHz
To South East Asia & India: **1200-1300z** on 13,625 kHz, **1300-1400** & **1500-1600z** on 9355 kHz.
To Oceania: **0800-0900** & **1100-1300z** on 9425 kHz, **0900-1000z** on 13,615 kHz, **1000-1100** & **1300-1400z** on 13,625 kHz, **1800-1900z** on 9355 kHz, **2100-2200z** on 13,840 kHz and **2300- 0000z** on 13,625 kHz.

New Monitor Radio programs start every weekday at 1000z, and are broadcast in one-hour segments on different slews. Each broadcast includes live newscasts at the top of the hour, followed by news, analysis, commentary and interviews on international events. Each transmission concludes with 'Letterbox', and a daily religious article.

On weekends, programming consists of spiritual discussions from the 'Christian Science Sentinel', Bible lessons and, on Sundays, a service from The Mother Church.

This comes from the First Church of Christ, Scientist, in Boston.

Austria

Radio Austria International has this schedule for English programming:
0130-0200z on 9655 kHz to North America
0230-0300z on 9655 kHz to North America, 9870 kHz to Central America and 13,730 kHz to South America.
0530-0600z on 6015 kHz (via Sackville, Canada) to North America
0630-0700z on 6015 kHz (via Sackville) to North America
0730-0800z on 6155, 13,730 kHz to Europe, 15,410, 17,870 kHz to the Near East
0930-1000z on 6155, 13,730 kHz to Europe, 17,870 kHz to Australasia
1030-1100z on 17,870 kHz to Australasia
1130-1200z on 13,730 kHz to North America
1230-1300z on 15,450 kHz to the Far East
1330-1400z on 6155, 13,730 kHz to Europe, 15,450 kHz to the Far East
1530-1600z on 11,780 kHz to South and South East Asia
1730-1800z on 9665 kHz to the Near East, 11,780 kHz to South & South East Asia
1930-2000z on 5945, 6155 kHz to Europe, 13,730 kHz to Africa, 9665 kHz to the Near East.

Rocky road for RCI

Radio Canada International, based in Montreal, this year celebrates its 50th anniversary. The service currently boasts eight languages, and a pedigree just as

....☞

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impressive of any of the world's major international broadcasters.

All has not been smooth riding, however, and even as you read this budgetary sub-committees are once again sharpening their knives for what is seen as an easy target for politicians due to the lack of public awareness of RCI's role.

The Canadian government first conceived entering into the international broadcasting field in the 1930s, but it wasn't until the closing days of World War Two that Prime Minister McKenzie King inaugurated the new international service of the CBC (Canadian Broadcasting Corporation). Interestingly, the first reception report of the inaugural broadcast came from the president of the CBC Board of Governors, Howard Chase. He was in London at the time, and had been monitoring the test transmissions.

The first broadcasts in English and French were mainly directed at Canadian servicemen stationed in Western Europe, though German was also among the earliest languages used. Scandinavian tongues followed, then Italian and Dutch. During the Cold War, RCI's focus was eastward, and West European languages other than German were dropped in favor of Slavic tongues.

In the ensuing decades, RCI expanded its scope and coverage, with target areas determined by Canada's External Affairs Department. Throughout, editorial control remained with RCI itself. Among the move important moves was the introduction of Asian services during the 1970s and '80s, primarily in Japanese and Chinese. This meant that by the mid-1980s, RCI was beamed programs to the whole world, with audience estimates put at sixty million souls.

Such a presence on the bands has RCI administrators riding high, but in March 1991 all that changed, with the advent of wide-reaching budget cuts, leaving the station a shadow of its former self. Staff redundancies ensued, with the axing of six language services, including German and Chinese. Popular programs such as 'SWL Digest' suddenly disappeared, and much programming began to be sourced from the domestic CBC network, a situation which remains today.

Radio Canada International boasts an impressive arsenal of transmitting equipment, including five 250 kW and three 100 kW units at its main complex at Sackville, New Brunswick. Additionally, airtime is hired via transmitters in Korea, Portugal, Austria, Japan, China and England. In return, RCI leases its own facilities to several international stations seeking to improve their coverage in North America.

Whilst presently maintaining sufficient quality programming to retain a solid audience, RCI staffers warn that further cut-backs to the service will make the station's task almost impossible. Deliberations on future budget allocations are continuing, and an adverse result for RCI may swiftly bring an end to a proud history.

News in Brief

- Some pruning has been evident at **HCJB** (Ecuador) in recent months, and many readers will have noticed

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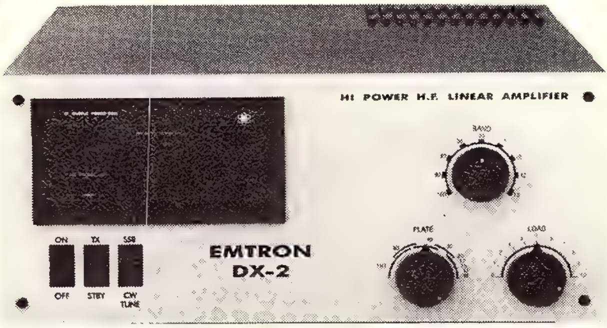

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TE-23M	2-ele. mini-beam	$440
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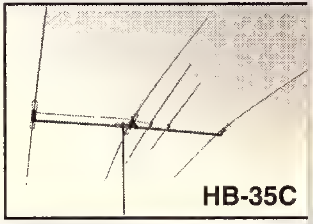
HB-35C	5-element trapless beam	$770



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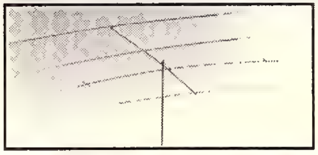

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TE-34	3-ele beam on 14-21-28MHz 1-ele on 7MHz	$695
TE-44	4-ele beam on 14-21-28MHz 1-ele on 7MHz	$870

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Size:	60mm x 185mm x 300mm

that only one frequency is now used for the service to the South Pacific, namely 6135 kHz from 0700-1130z. This channel can range in quality from excellent to very patchy, but a useful alternative can be found in 15,540 kHz (USB), which operates 24 hours per day. The 'DX Partyline' program now goes out to this area at 0908z Saturdays, and the mid-week 'Latest Catch' Wednesdays at 1030z.

- Belgium's **Radio Vlaanderen International** commenced relaying its German service via the facilities of **Radio Deutsche Welle** at Julich at the end of March. This arrangement is evident on 7105 kHz from 0830z Monday to Saturday.

The trade-off is access to Radio Vlaanderen's medium wave channel of 1512 kHz for Deutsche Welle, as well as an Astra satellite transponder.

The English service from Brussels for the Pacific continues on 9925 kHz, now 0630-0700z due to daylight time being observed in Europe. This is really a poor choice, with the strong **KWHR** (Hawaii) residing right next door on 9930 kHz. Note that 'Radio World' is now featured on Sundays, replacing the earlier Saturdays and Mondays.

- For a taste of exotica, try the new **All India Radio** regional outlet located at Gangtok, from the former Himalayan kingdom of Sikkim on 3390 kHz. Sikkim is bounded by such interesting places as Tibet, Nepal and Bhutan and really is near to the roof of the world, containing the world's third highest peak, Kanchenjunga. Quoted on radio Nederland's 'Media Network' program, Victor Goonetilleke of Sri Lanka reports reception of AIR Gangtok from 1400-1600z, including the obligatory English news relay from Delhi at 1530z.
- Don't forget that **Adventist World Radio Asia** on Guam is continuing with its series of test transmissions to the Pacific this month, and offering a special QSL card for correct reception reports. The frequency is 9530 kHz, on air 0900-1000z with 100 kW, beamed primarily to Papua New Guinea and outback Australia. Don't be surprised if we see Melanesian languages emerge on shortwave from AWR, should the response from PNG prove adequate. As an aside, 'Wavescan' can be heard during the test transmissions, on Sundays.
- Several DXers in the US have reported that the low-powered Canadian, **CHNX** in Halifax, has reactivated 6130 kHz, and is testing with just 28 watts! When operating at its full 100 watts, CHNX has been an almost insurmountable challenge for a lot of Australian DXers, so any loggings made at the present time would be even more highly valued. According to a report on HCJB's 'DX Partyline', the station is using only the exciter stage of its transmitter, pending repairs to the amplification stage.

CHNX has been on air since 1929, supplementing medium wave **CHNS** which it relays, beaming mainly to fisherman in the local area. It would be fair to say that the majority of listeners now are hobbyists, who undertake the challenge of hearing such a low-powered operation within

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SHORTWAVE LISTENING *(continued...)*

the crowded 49 metre band. The most likely time for reception in Australia is after 0630z.

Weird and wonderful department...

One of the greatest enigmas on the bands has been **Radio Aum Shinrikyo**, which mysteriously appeared on shortwave with two daily English programs a few years ago, using transmitters in the Commonwealth of Independent States.

Programming is of a spiritual nature, seemingly based on Buddhist teachings, but with a difference.

The continuation of Radio Aum Shinrikyo must surely now be in doubt in the light of allegations made linking members of Japan's Aum Shinrikyo sect with various ghoulish deeds, including the recent nerve gas attack in Tokyo and a kidnapping or two. Aum Shinrikyo (Teaching of the Truth) is lead by a charismatic former lawyer, Shoko Asahara, who features prominently in on-air material and in literature disseminated by the group's broadcasting arm.

This information may be overtaken by events, but at the time of writing Radio Aum Shinrikyo is available at 0330-0400 and 1930-2000z on all of the frequencies used by Voice of Russia World Service in English.

Denmark Schedule

Radio Denmark issued a new schedule on March 26, which will continue in force 'til September 23. The following transmissions should be audible in Australia and the Pacific region generally:

0830-0855z 21,705 kHz to Southeast Asia and Australia
0930-0955z 17,740 kHz to Southeast Asia and Australia
1030-1055z 13,800 kHz to Greenland
1130-1155z 15,345 kHz to eastern North America
1230-1255z 15,170 kHz to the Far East, 13,800 kHz to Western Australia
1330-1355z 13,800 kHz to Southeast Asia and Western Australia, 15,170 kHz to the Far East, 11,850 kHz to North America
1430-1455z 11,850 kHz to North America, 15,620 kHz to India
1930-1955z 9590 kHz to New Zealand
2030-2055z 7315 kHz to New Zealand, 7485 kHz to Europe
2130-2155z 7135 kHz to Southeast Asia and Australia, 7315 kHz to the Far East, 9590 kHz to Greenland
2230-2255z 9480 kHz to the Far East, 9635 kHz to Southeast Asia and Australia, 9485 kHz to Eastern North America
2330-2355z 7275 kHz to Southeast Asia and Western Australia
0030-0055z 7275 kHz to Southeast Asia and Western Australia
0630-0655z 7180 kHz to Europe, 11,850 kHz to West Africa, 13,800 kHz to East Africa and 15,175 kHz to New Zealand
0730-0755z 7180 kHz to Western Europe, 9590 kHz to Europe, 13,800 kHz to West Africa, 15,175 kHz to New Zealand

Radio Denmark broadcasts in Danish only, and shares facilities with Radio Norway. The daily live transmissions are aired at 0830 and 1730z, with those broadcasts in between being repeats.

Radio Denmark now once again issues QSL cards for correct reception reports, if one International Reply Coupon (IRC) or one US dollar is enclosed.

This information excerpted from a schedule posted by Mark Vissers on the FidoNet Shortwave Conference.

More news next month!

4 ele 10-11	$218
5 ele 10-11	$259
6 ele log-yag array 12dbd 11M	$391
2 ele Delta loop	$198
NEW 10-11 M co-linear VERT 6dbd	$189
Duoband 10-15 3 ele EA	$278
3 ele 15M	$199
3 ele 20M	$312
2M 144.100 12 ele	$145
Satelite Cross Yagis	$Call
12 ele 2 M	$123
80 M VERT top loaded.	$265
M B Vert NO TRAPS 10-80	$265
13-30log-periodic 12 ele all stainless/stl fittings	$915
TRI band beam no traps 5 ele	$690
40 M linear loaded 2 ele	$492
6 ele 6 M N.B.S 50mm boom	$296
NEW 6M colinear vert 6dbd	$157
70 cm 3 5/8 vert 4 radials	$96
2 M 2 5/8 co/lin vert	$97
23cm 36 ele BRASS-con assembled 18dbd	$170
70 cm 12 ele/17 ele B/Feed.	$102/$127

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VK1 AREA

***Phillips** FM-828 ideal packet has 1200 baud & 4800 baud freq, also voice repeaters 146.900 & 146.950 fitted $100. **Western Digital** 1MB video card $35. **Revex** ant switch $40 Tex . VK1TX (06) 296 2508. LAO

VK2 AREA

***Admiralty** pattern X2113A transmitter 5G, serial MH-954, 1944 vintage overhauled & working. Will trade anything useful. Steve, VK2DVK (06) 227 4259

***Amateur Radio Action** 1979-1994, GC the lot $50. Moving interstate. Gordon (049) 97 4401

***Antenna** TH-6 triband 6-el, also Hills rotator, complete, plus tower, crank up 50ft in 2 sections, all dismantled $800 the lot. Geoff, VK2UV (02) 639 8066

***AVO** model 7 multimeter, A1 cond good for lab or bench work $350 ono. (02) 807 3229 (9-10am) or (02) 638 5017 (7-10pm)

***Communico** 250A, VHF hi-band radio, 25W, aligned to 2m, with mic & tech manual. In GWO $50 incl freight. David, VK2TQM (02) 898 7426 B/H. LAO

***Computer**: AT-286 20MB HD 5.25" FDD, 1MB RAM, VGA card, mono monitor (amber), I/0 card, MS-DOS. A great machine for a beginner or for packet radio. $250. Karl, VK2GKA (048) 61 2702

***Deceased Estate: Trio** TS-120V $300. **Kenwood** PS-30 power supply $150. **Kenwood** TL-120 linear amp $200. **Kenwood** AT-180 ant tuner $75. Inst manuals incl. VK2BHC (02) 644 1929. LAO

Icom AH-2A auto ATU, suit IC-735 or other models with CI-V interface or 24-pin accss sckt. New in carton $500 or will exchange for any of following in good unmod cond: Type A MK3, type 3 MK2, HRO rcvr, general radio impedance bridge, marine shipboard rcvr circa 1930/40, or w.h.y. Bill, VK2FKE (043) 43 2339, Fax (043) 43 2036

***Icom** IC-725 HF xcvr, all bands 100W $800. **Kenwood** AT-250 auto ATU $350. Both in VGC & with manuals & orig boxes. Ernest (02) 906 2628. LAO

***Kenwood** AT-250 auto ATU, SWR power 0/20/200W metering, pack EC $350. Ellis, VK2ESS (02) 649 9518

***Kenwood** TS-120V HF xcvr, VGC with manual & mic $400. Paul, VK2NPH (049) 33 5995

***Kenwood** TS-130S HF xcvr $450. **Kenwood** PS51 20A cont duty power supply $400. **Kenwood** MB-100 mob mount bckt for TS-130S $50. Edwin, 018 11 8161 or (02) 484 4767 A/H. LAO

***Portable packet** station: Epson laptop, Baycom modem, Kenwood TH-21A HT, complete & ready to go. $500. Horst, VK2HL (02) 971 9795. LAO

***Power supply** 250V 13.5V 10amp regulated, auto transformer 250V 100V h/duty. Mannie, VK2WMS (02) 489 6546

***Wanted**: 3-el triband beam GC. Mannie VK2WMS (02) 489 6546

***Wanted**: Circuit diag or manual Phillips Oscilloscope GM-5654. Brian Quinney, PO Box 302, Parkes 2870 or (068) 62 1592

***Wanted**: Copies of circ diags & inst manuals for National Radio Co incl NCX-200 & National 200 vintage valve SSB amateur freq xcvrs. I want to re-commission these sets. Can anyone help? I will pay for copying, post etc. Albert, VK2XRN (02) 520 0897

***Wanted**: Copy hndbk for Marconi sig gen, model TF1-44G. All copying & post costs paid plus $20 for your trouble. **Also** need MU/14 (rectifier) & ML-4 (triode) for same model. Bill, VK2FKE (043) 43 2339, fax (043) 43 2036

***Wanted**: Kenwood TH-48A 70cm HT also 70cm mobile xcvr. Ken, VK2SX (02) 413 1846

***Wanted**: National DR-28 rcvr, also Sony ICF-6800W. Brian, VK2BVH (02) 525 2547

***Wanted**: Shure 444D mic in GC, also brass PMG straight telegraph key.

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Jack Haden, VK2GJM, PO Box 299, Ryde 2112

***Yaesu** FRG-965 VHF/UHF scanner with mob mount, pwr supp, handbook, svce manual. EC, firm $500. **Yaesu** FT-7 HF xcvr with mobile mount, handbook, VGC $350. Both orig packing. Rob, VK2CZ (066) 54 2782. LAO

***Yaesu** FT-101E HF xcvr with mic, key, manual, no mods $350. **Realistic** PRO-2010 scanner 56-520MHz $100. Stephen, VK2ESG (046) 81 9675. LAO

***Yaesu** FT-101Z with factory fitted digital r/out, mint cond, goes very well, orig cart, manual $500. **Yaesu** FRG-9600 rcvr, also mint cond $500. **Emtron** EAT-300A ATU EC $180. **Eddystone** EC-10 MkII HF rcvr, VGC for its age $125. All above gear suit fussy buyers. VK2QV (066) 49 2228. LAO

***Yaesu** FT-207R 2M HT with manual, battery GC $160. Keith, VK2CKH (044) 46 5659. LAO

***Yaesu** FT-207R 2M HT, GC, manual, chrgr, goes well. Cheap entry into packet $160. Keith (044) 46 5659. LAO

***Yaesu** FT-26 2M HT with extras, VGC $340. **Kenwood** TS-520S HF xcvr, GC $400. **Uniden** UH-005 UHF CB HT GC $240. Mick, VK2BH (066) 54 3195. LAO

***Yaesu** FT-707 HF xcvr plus FP-707 pwr supp, mint cond $1000. ***Kenwood** TS-850S/AT with narrow SSB filt & power supply, mint cond $2900. **Mirage** B-3016 2M linear 30Win, 160W out, $400. **Dick Smith** 100W 6m linear $350. **Kenpro** RF speech proc. $100. Steve, VK2ZSC (02) 626 7667. LAO

Yaesu FT-901DM HF xcvr with YD-148 mic, mods from CQ mag, VGC, $950 ono. **Yaesu** FT-707 mob HF xcvr with mob mount VGC $500 ono. **Yaesu** FL-2100Z linear amp EC $1000 ono. **MFJ** 1.5K tuner, black body EC $485 ono. All above come with manuals, cords & plugs etc. Steve, VK2SPS (02) 9999 2933 after 6pm. LAO

Please note that all phone numbers are after hours unless otherwise noted

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VK3 AREA

***ATV station:** 88-el 70cm Jaybeam ant, 444MHz tx, 15W sync-tip, 579MHz GaAsFET preamp c/w length of R-68 coax $285. Ross, VK3SR (03) 481 8482. LAO

***HP**-608D RF sig gen $175. **HP**-431B microwave power meter with HP-478A Thermistor mount $450. **Tektronix** 464 storage CRO, many plug-ins & access $375. Chas, VK3BRZ (052) 82 3167

***Hy-Gain** TH-3JR, 10/15/20m, near new.

***Tower**, tilt-over type 10m high, galv with HD rotator, display, co-ax & eng calcs $1200 ono. Rob, VK3MX (03) 626 7371 B/H, (059) 68 5596 A/H

***Icom** IC-735 HF xcvr, complete, VGC, with Icom AH-2 auto tuner $1500. or will sep: IC-735 $1150; AH-2 $500. Bill, VK3WK (055) 65 9348. LAO

***Icom** IC-R71 rcvr, mint cond, inst bk, orig pack. $900. Doug, VK3AQL (03) 857 8475

***Icom** IC-W2A dual-band HT with BP-84 1AH batt pack, soft case, RH-77 ant, spkr/mic, plug packs $800. Darrell, VK3TDD (03) 744 1268. LAO

***Kenwood** TH-25A, TH-45A HTs, both with boxes, manuals, DC adptrs. Also one spkr/mic, one dry cell case. $275 each or $500 the lot. Joe, VK3FBA (03) 331 0718. LAO

***Kenwood** TS-140S 100W all-mode HF xcvr $950. **Yaesu** FT-23R 2M HT with FNB-10 FNB-14 batt packs, MH-12 spkr/mic, 12V chrgr, Diamond 5/8 whip, hardly used $350. Laurie, VK3BBC (060) 77 1285. LAO

***Kenwood** TS-450S/AT HF xcvr, bought new, $2000 ono. **Dick Smith** 4-pos ant switch, cost $80, sell $30. **Icom** SM-6 mic $35. Lafayette SWR meter $10. Jack, VK3EK (03) 386 2795. LAO

***Phillips** FM-828 on the 53.900, Melb repeater, VK3RMS xtals fitted, with Cushcraft 6m vert ant.

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$100 for both. **Also** Pioneer PX-7 Titling computer $60, Shinwa 70cm DTMF HT, 16 progmble chnls, CTCSS, 5W hi, 1W low, with desktop drop in chrgr $130. Terry, VK3KJM (018) 051 763 B/H, (03) 438 5220 A/H. LAO

***Power supply** low profile 13.8V DC 25amp cont 30 amp peak $275. **Daiwa** ATU 80-10M incl WARC. 500W PEP cross-needle SWR/power meter. 2-pos ant switch $175. **Rotator** CDE Tailtwister heavy duty 240V operation $500. **Log** Periodic ant 9-el 13-30MHz $500. 2M vertical **Ringo** antenna $40. 2M 13-el **ATN** 15dB long Yagi with sleeve balun $120. 2M 4-port power divider $100. Trevor, VK3KEG (054) 484700

***Satellite rcvr** 299-ch remote control, K or C band operation, new in box supplied with K band $290. Neil, VK3BCU (03) 390 2609

***Vinten** BTR-50 50W base station with xtals Ch7 $100. Noel, VK3ANS (054) 50 3054. LAO

***Wanted**: Manual or any circ info for a Crammond CTR-66 xcvr. Henry Titchen, PO Box 90. Kensington 2033 or (03) 387 3234

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Ideal for small yards, rotatable.
Send for details to Dave Ralph, VK4ASB, PO Box 2198, Chermside Centre 4032.
Phone (07) 865 1537 (AH).

***Wanted**: rcvrs AR-7, AMR-300, HRO, also xcvr type 3 MK2. Fred, VK3JM (03) 801 4972

***Wanted**: Trio 9R-59DS alignment procedure, manual. Will pay costs. David, VK3THY (03) 439 3649

***Wanted**: YM-24 ext mic to suit FT-207R at a reas price please. Barry (052) 78 6513

VK4AREA

***Amiga** amateur radio programs, about 26 disks. Phone Herb VK4KM (071) 64 2202 for free catalogue disk.

***Hy-Gain** tower, 60ft 3-stage, 13.5 inch triangle base, Hy-Gain TH-7DXX tribander & refurbish kit, prop-pitch motor, insulators. Offers, part or whole? Peter, VK4APD (07) 397 3751

***Marconi** spectrum analyser with freq converter, ext local oscillator, power unit, all in one metal cabinet. VGC, sold 'as is' cond. Rare combination $1250. Cyril (07) 266 2275

***Sangean** ATS-803A rcvr with inst book & box. Can only be tuned manually, otherwise good, in GC $185 plus freight. David (076) 54 3019

VK5 AREA

***Kenwood** AT-250 auto ATU, PC, can be matched to any xcvr $350. **Yaesu** FT-23R 2M HT, 2 batts, PA-6 adptr, spkr/mic, Digitor 30W amp $320. Doug, VK5NIY (08) 8837 3671. LAO

***Lowe** HF-150 comms rcvr 30kHz-30MHz. Improved model, comes with keypad, inst book etc. Mint cond. $600. Arn, VK5XV (08) 298 7029

***Wanted**: Tech info National NL-81 & NL-812 tubes. D Smith, VK5LS, 49 Johnson Parade, Blackwood 5051

VK6 AREA

***Tet-Emtron** TE-33 tribander, **Create** rotator RC-5 incl control cable, balun, very little used $750 ono. Bernd, VK6WO (09) 291 8159 or (09) 345 2284

***Yaesu** FT-767GX HF, 2m, 6m, 70cm all-mode xcvr with tuner, TCXO, power supply, all modes. Offers please. Graham, VK6RO (09) 451 3561. LAO

***Kenwood** TS-520S HF xcvr with DG5 digital display $480. **Yaesu** FT-7 mobile xcvr $400. Both with mics. **Tower** 15.5m Cyclone proof $950. All EC Stuart, VK6JCS (091) 91 4754. LAO

***Yaesu** FT-101E HF xcvr with manuals, in as new cond $395.
Ian, VK6PIF (09) 279 8598. LAO

VK8 AREA

***Wanted**: Kenwood PS-53 AC power supply. David, VK8HZ/VK3HZ (041) 432 8877.

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The Moorabbin & District Radio Club 1995 Hamfest will be held on Saturday, May 13, 1995 from 10am at the Brentwood Secondary College, Glen Waverley,
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Extensive trade displays.
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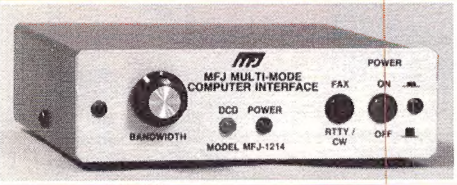

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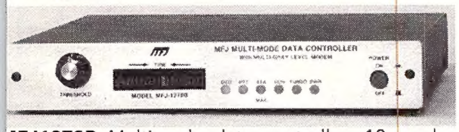

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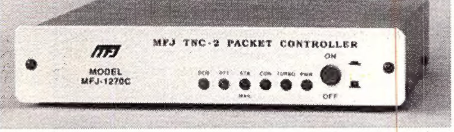

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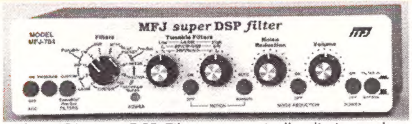

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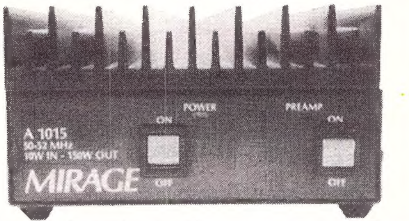

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